

US EPA RECORDS CENTER



1013494

**SOLUTIA - 029**



Kenneth  
Bardo/R5/USEPA/US  
08/04/2000 11:05 AM

To rjhill1@solutia.com  
cc  
bcc

Subject DOCC

Bob - Just a note to let you know that we received the DOCC on August 2. I conducted a cursory review, mostly for thoroughness, but also made some observations. Attached is an initial set of comments. More will follow but I thought you could turn-around some of the material that is deficient early on so a more complete review could be better conducted. If you have any questions, let me know. - Ken



Solutia DOCC Comments.w



## Preliminary EPA Comments on Solutia DOCC

1. **Figure 1** - The property lines of adjacent landowners should be shown. The location of T.J. Moss (Kerr McGee) is not depicted in the figure.
2. **Page 2-16** - A comparison of the VOCs and SVOCs on page 2-16 to historical groundwater data summarized in Table 1 suggests that additional VOCs and SVOCs are also potential constituents of concern. These VOCs include 1,1-DCA, 1,1-DCE, 1,2-DCA, PCE, TCE, and chloroform which were detected at a frequency from 2.3 to 6.5%. The SVOCs include 2,4-dimethylphenol, 2,4-dinitrochlorobenzene, 2,4-dinitrophenol, 3-nitrochlorobenzene, 4-nitrophenol, aniline, benzoic acid, bis(2-ethylhexyl)phthalate, *o*-chloronitrobenzene, *p*-chloronitrobenzene, di-*n*-butyl phthalate, diethyl phthalate, *n*-nitrosdiphenylamine which were detected at a frequency from 4.2 to 45.8%.
3. **Page 2-17** - U.S. EPA needs copies of the 1986 and 1993 Geraghty & Miller reports.
4. **Table 1** - Provide the historical groundwater data summary for pesticides, PCBs, and metals. For metals, state whether the concentrations are total, dissolved, or both.
5. **Appendix 3** - While site sampling location maps are provided in Appendix 3, well construction data is not provided for the groundwater monitoring well sampling points. Provide boring logs for all the monitoring wells/borings and a table summarizing pertinent well information such as: date completed; borehole depth; ground elevation; top of casing elevation; screened interval; geologic zone monitored, well construction material; and casing diameter. For wells that have been destroyed (e.g., well nests GM-26, GM-62, and GM-66), document that the wells have been properly abandoned and ascertain the need for replacement wells.  
  
Also provide geological cross-sections, historical potentiometric surface maps (including any calculation of vertical groundwater flow), historical pump tests, and calculations of groundwater velocity. A better depiction and presentation of groundwater and contaminant movement is needed to accurately predict potential groundwater discharge points in the Mississippi River.
6. **Attachment 2** - The Sauget groundwater use ordinance does not include "garden or lawn watering" in its definition of potable water, unlike the Cahokia ordinance provided in Attachment 1.
7. **Pages 4-4 and 4-5** - It is noted that the high concentration of SVOC depicted in Figure 13 at GM-13 consists of 1,2- and 1,4-dichlorobenzene, similar to the constituents found at GP-19A. Confirm that this area of high SVOC concentration is where dichlorobenzenes were manufactured in the past.
8. **Page 4-5** - Reference is made to a possible off-site source (Mobil refinery) at G-102. However, the SVOCs detected here consist mostly of 1,2-dichlorobenzene, 3-nitrophenol,

and other site constituents of concern. Benzene is also present but associated gasoline compounds such as toluene, ethylbenzene, and xylene are not. 1,2-dichlorobenzene has also been historically detected in nearby well GM-12A. Since these compounds are also related to past Solutia processes, Solutia would need to undertake extensive upgradient sampling east of the facility to determine whether the extent, if any, of their presence beneath the Solutia facility is from an upgradient source.

9. **Section 5.0** - Certain information is needed to better understand this section. Provide site sampling location maps for all 119 soil samples. Provide the dioxin/furan data in the tables and/or appendix. State whether pesticides/PCBs were tested for by IEPA; Table 5 does not list them. Describe which samples in Attachment 15 are Solutia's and which are IEPA's. Only 59 of the 119 soil samples were provided in Table 4 of Appendix 15.

**SOLUTIA - 031**



Kenneth  
Bardo/R5/USEPA/US  
08/09/2000 04:36 PM

To rjhill1@solutia.com  
cc BSyare@solutia.com  
bcc

Subject U.S ACE Info

Bob and Bruce - I have been going through the U.S. Army Corps of Engineers, St. Louis District's website and have come across some pertinent information related to your investigations of the Mississippi River. A hydrographic survey, using east-west transects spaced 500' apart, was performed in the fall of 1998, which included river mile (RM) 178.2 to 180.3 (St. Louis) and RM 176.2 to 178.2 (Engineers Depot). The survey includes the area you are to investigate. At the time of the survey, the east side of the river was generally a series of channels and bars. The channel elevations are generally at 350' while the bar elevations approach or exceed 370'. In the vicinity of the study area (Site R), river bottom varied between 358' to 375'. Water levels at the time of the survey were 390' (St. Louis) to 389.4' (Engineers Depot) on 9/2/98 and 383.1' (St. Louis) to 382.1' (Engineers Depot) on 9/14/98.

At the interstate bridge at St. Louis, a channel is identified along the east bank that becomes a bar and then another small channel in the vicinity of the 6-pack power plant. Beginning in the vicinity of Site R is an extensive bar that grades into an extensive channel in the vicinity of Site Q. Across on the west bank near Site Q is an extensive bar. Although these features are a snapshot of river characteristics in fall 1998, there do provide background information that may be useful in properly locating future sample locations. For example, bars and channels may be indicative of depositional and erosional features that are important in properly locating sediment samples. The elevations of the river bottom may also be important in determining where groundwater may be preferentially discharging to surface water.

The U.S. Army Corps of Engineers, St. Louis District also maintains river level gages at RM 179.6 at the foot of Market Street and at RM 176.8 at Engineers Depot at the foot of Arsenal Street. The Corps maintains records in its files at these two locations and some current readings are available on their website at RM 179.6.

The dynamic physical features of the current river bottom need to be understood before undertaking an extensive sampling program in the Mississippi River. For example, a similar hydrographic survey should be performed to aid in the location of sediment and surface water sampling locations. The better these features can be defined, the less likely the need for extensive sampling to account for unknown variables such as sedimentation features and groundwater discharge points. The information can be used to support appropriate sample locations.

I was also wondering if certain analytical parameters could be utilized to pinpoint groundwater discharge zones. Certain chemical and physical parameters associated with groundwater (other than known contaminants) might be useful to identify discharge points. For example, specific conductance, total dissolved solids, dissolved oxygen, temperature, pH, certain cations, etc. parameters could be used as indicators of groundwater mixing with surface water.

For your information, pertinent web pages can be found at [www.mvs.usace.army.mil/engr/sid/rivermile.htm](http://www.mvs.usace.army.mil/engr/sid/rivermile.htm) and <http://lms61.mvs.usace.army.mil>. - Ken

**SOLUTIA - 032**

Preliminary Comments on Draft Ecological OAPP for Solutia Inc.

1. **Section 1.0** - As discussed in earlier conversations, an agreement on a Site Sampling Plan for surface water, sediment, benthos, bioassays, and fish is premature at this time. Further site reconnaissance, discussion, and field-based decisions will be necessary before sampling can be initiated. In addition, a better understanding of groundwater and surface water interactions and sediment transport in the Mississippi River is needed.

Solutia must also ensure that at the time of river sampling, groundwater is documented as discharging to the river (including discharging for a significant time period). This would entail monitoring of river water levels along with water levels in the monitoring wells (series A, B, and C) in the vicinity of the river (this program should begin in August). Sampling must not be performed until the potential impacts of contaminated groundwater discharging to the Mississippi River can be appropriately quantified. The investigations should focus on quantifying impacts under an apparent worst-case scenario (i.e., high water table and low river level) and bias sampling locations towards those areas that are most likely to be contaminated (i.e., contaminated groundwater discharge zones).

2. **Section 1.3** - The project objectives should also include determining the extent of contamination, if any, migrating into the Mississippi River and determination of any unacceptable risks associated with that contamination. Risk should also be evaluated for all potential receptors and not be limited to tissue data for input into the human health risk assessment. For example, it would appear that a potential complete pathway exists for workers and recreationists to contaminated surface water and sediments.
3. **Section 1.4** - Certain sediment characteristics will be used to determine the reference locations upstream and downstream of the plume discharge. Make sure these characteristics are consistent with those locations in the area of the plume discharge. U.S. Corps of Engineers information provided in an e-mail to Solutia on August 9, 2000, documents a series of channels and bars along the east side of the Mississippi River in the area of the investigation. Sediment features and characteristics may be highly variable within the study area.

The spatial relationship between channels and bars and the Henry Formation deposits and its corresponding shallow, middle, and deep aquifers should also be investigated and understood. For example, the deepest parts of the Mississippi River (approx. 350') appear to be at the level of the sand deposits within the middle aquifer of the Henry



Formation while the shallowest parts of the river (approx. 375') appear to be at the level of the finer silt deposits within the shallow (water table) aquifer of the Henry Formation or at its contact zone with the more coarse-grained middle aquifer. These spatial relationships may help identify the most likely groundwater discharge zones in the river and therefore help locate the most appropriate sampling areas.

4. **Section 1.5** - Ten primary contaminants of concerns (COCs) are identified by Solutia based on historical groundwater data. U.S. EPA believes other VOCs and SVOCs are COCs but this concern is generally addressed by Solutia's proposal to include the TCL list of 35 VOCs and 64 SVOCs in surface water and sediment sampling, and SVOCs in fish tissue. However, certain compounds that U.S. EPA believes are COCs and that are not on the proposed TCL list include:

*2,6-dichlorophenol* - Has a lower EDQL than 2,4-dichlorophenol (which will be reported) and should be quantifiable using Method 8270C.

*aniline* - Typically detected in high concentrations in groundwater and is a quantifiable compound using Savannah Laboratories Method 8270C.

*2- and 3-chloroaniline* - Only 4-chloroaniline is to be reported in the proposed TCL list but both 2- and 3-chloroaniline were typically found in groundwater along with 4-chloroaniline. Should be quantifiable using Method 8270C.

*4-nitrophenol* - Historically detected in wells P-7, GM-31A, and GM-54B and has an EDQL. Has been a quantifiable compound at Savannah Laboratories.

*2-, 3-, and 4-nitrochlorobenzene* - Typically detected in high concentrations in groundwater when analyzed for and should be quantifiable using Method 8270C.

*benzoic acid and benzyl alcohol* - Benzyl alcohol has an EDQL and both are quantifiable compounds using Savannah Laboratories Method 8270C. When analyzed for, they were detected in shallow wells in the vicinity of the river.

*2,4- and 3,4-dinitrochlorobenzene and 2- and 4-nitrobiphenyl* - When analyzed for these compounds were typically found in well GM-31A.

*pesticides/PCBs and herbicides* - The only time groundwater in the vicinity of the Rivers Edge Landfill (Sauget Area 2 Site R) was tested for pesticides/PCBs and herbicides (see Appendix 9 of DOCC) was in June 1992. 2,4-D was detected in

the shallow zone; BHC, dieldrin, endosulfan, 2,4-D, and 2,4,5-T were detected in the intermediate zone; and endosulfan, DDD, methoxychlor, 2,4-D, and 2,4,5-T were detected in the deep zone. PCBs were not detected. This appears to be the only time and area where these compounds have been tested for at or in the vicinity of the Solutia facility. Given the manufacturing history of Solutia, a significant data gap exists regarding testing for pesticides/PCBs and herbicides in groundwater. At this time it would appear, at a minimum, that pesticides and herbicides are COCs. The paucity of data is a problem given that river sampling is expected to be done this fall. Therefore, U.S. EPA recommends that all sampling include the full suite of pesticide/PCB and herbicide compounds. In the alternative, Solutia may undertake an extensive groundwater sampling program to determine the presence or absence of specific pesticides/PCBs and herbicides [including 2,4,5-TP (Silvex)]. Based on those results, the exact COCs could be determined, however this could potentially hold up sampling.

*polychlorinated dibenzodioxins and dibenzofurans*

(PCDDs/PCDFs) - These compounds are hazardous constituents associated with wastes from the production or manufacturing use of tri-, tetra-, or pentachlorophenol, or of intermediates used to produce their pesticide derivatives; and discarded unused formulations containing tri-, tetra-, or pentachlorophenol. Based on the DOCC, chlorophenols and their pesticide derivatives were produced at the Solutia facility and these compounds have been detected in groundwater at or in the vicinity of the facility (e.g., wells GM-28B, GM-28C, GM-31A, GM-54B, GM-56C, GM-57C, GM-58A, B-25A, GM-106, P-7, P-8, and P-12). A review of historical data shows that no full-screen analysis of PCDDs/PCDFs (Method 8280) has ever been performed on groundwater samples. Data provided in Appendix 14 of the DOCC does show that groundwater from wells GM-27B and GM-28B in September 1984 and from well GM-27B in November 1991 at the Rivers Edge Landfill was analyzed for 2,3,7,8-TCDD only but it was undetected using detection limits of 1ppt, 1.6 ppt, and 1 ppm, respectively. Based on the manufacturing history of Solutia and available groundwater data, it would appear that PCDDs/PCDFs are potential COCs at this time. Therefore, U.S. EPA recommends that all sampling include a full-screen analysis of PCDDs/PCDFs (Methods 8280/8290). In the alternative, Solutia may undertake an extensive groundwater sampling program to determine the presence or absence of specific PCDDs/PCDFs. Based on those results, their inclusion as a COC could be determined, however this could potentially hold up sampling.

Based on the discussion above, modify and/or amend Tables 1-1 and 1-2 accordingly.

5. **Section 1.6** - The results of the Reconnaissance Survey should be summarized in a letter report and provided to U.S. EPA prior to implementation of the main sampling program. The report should include a summary of all field observations made regarding the river, water level data evaluation, habitat evaluation, sediment evaluation, TOC and grainsize data, results of hydrographic survey, proposed sampling locations and the rationale for choosing those locations
6. **Section 4.2.1** - Elaborate on the discussion of modifying analytical preparation such as freeze-drying techniques.
7. **Section 4.3.1** - Water samples must also be collected in a manner that minimizes volatilization and that are representative of a groundwater discharge area.
8. **Section 4.4.1** - Section 4.1 describes the study area as sand and gravel sediments with few depositional areas due to a swift current and scouring effects. Therefore the description of sediments in the upper few inches as being the zone most relevant to exposures of ecological receptors may not be accurate since the study area is not a lacustrine or placid fluvial environment. The dynamic sediment transport process occurring in this area of the Mississippi River may expose previously buried sediments as they migrate downstream.

More important is the sampling of sediments in known active groundwater discharge areas that would be expected to come into contact with potentially contaminated groundwater. These sediments would be expected to attenuate certain contaminants based on their characteristics and the nature of the contaminants. These potentially contaminated sediments would then be transported downstream and may or may not be located in the upper two inches. Modify the sediment sampling program to consider the actual processes expected to be occurring in the Mississippi River.

9. **Section 4.4.1** - Appendix B of the U.S. EPA, Region 5 QAPP Policy states that a third EnCore sample for VOCs should be obtained at each location in case a backup for reanalysis is necessary. If an EnCore sampler can not be used because of the coarse grain-size of the sediments, the larger sample jars should use the field methanol preservation method to minimize volatilization during laboratory handling of the sample and VOCs analyzed using Method 5021 or 5030. If sediments are expected to consist of carbonates, a field check for effervescence using sodium bisulfate should be performed to confirm whether low-level preservation is an option or whether Type II organic free water preservation is necessary.

10. **Section 4.7.2** - Ensure that fish collected for tissue analysis used in the human health risk assessment are of sufficient size and representative of those that humans might consume. A minimum appropriate weight should be defined and agreed to prior to fish collection. The same size requirements would not be needed for the ecological risk assessment but the fish analyzed should be representative of the local fish community and the forage fish should be of a size that piscivorous fish and wildlife are likely to capture and eat.

The composite fish samples in the reference locations are proposed to consist of 3 to 5 individual fish while only 1 to 2 individual fish are proposed for the composite fish samples in the plume discharge area. Provide the minimum sample weight needed to complete all the necessary analyses so the appropriate number of fish may be estimated. Each composite sample in the plume discharge area should contain at least three individual fish (as shown in Table 4-6).

The text states that three fish samples will be obtained for each of the four categories of fish within the plume discharge area but this is not reflected in Table 4-6 where only one fish sample is shown for each of the four categories of fish within the plume discharge area. Modify Table 4-6 to reflect the text (i.e., three composites will be obtained for each of the four categories of fish within the plume discharge area).

11. **Table 4-6** - As discussed in comment 4 above, other parameters such as pesticides/PCBs, herbicides, and PCDDs/PCDFs need to be analyzed for unless Solutia can demonstrate that there is no potentially complete pathway for these constituents to enter the Mississippi River environment.
12. **Section 7.2.9** - Confirm that it is appropriate to report tissue analysis on a wet-weight basis (e.g., are EPA screening values on a wet-weight basis).
13. **Appendix B** - Appendix I of the U.S. EPA, Region 5 RCRA QAPP Policy reports that certain facility COCs can be analyzed using different methods than those proposed in order to increase sensitivity. For example, di- and trichlorobenzenes can be effectively tested by Method 8120 with a 100 fold or more increase in sensitivity versus Method 8270. Method 8150, with modification, can be used to test for pentachlorophenol. Pentachlorophenol exhibits poor sensitivity, poor chromatography, and low recovery by Method 8270. Evaluate these alternative methods to ensure that the facility data quality objectives are met.

There are three isomers of trichlorobenzene and five isomers of trichlorophenol. Ensure that the sampling and analysis program accounts for all isomeric forms of facility COCs.

Aniline and phenol often co-elute on the DB-5 GC column of Method 8270. The two compounds should not be in the same calibration standard solution as phenol's mass spectra destroys the accuracy of the aniline spectra. Calibration for aniline and phenol must be carefully reviewed so that false negatives do not occur for aniline.

**SOLUTIA - 033**



Kenneth  
Bardo/R5/USEPA/US  
08/25/2000 11:49 AM

To rjhill1@solutia.com, bsyare@solutia.com  
cc Lisa Geist/R5/USEPA/US@EPA  
bcc

Subject Site Visit

Bob and Bruce - We found the site visit productive and had some good discussion on the scope of the work to be performed in the Mississippi River. I have put together a list of issues that we appeared to agree upon after some discussion. This list does not address all our comments and we still need to hear from you regarding those issues. I should be able to provide you a name on who will provide our oversight next week. If you have any questions on the attachment, let me know. - Ken



Solutia Meeting Notes.wp

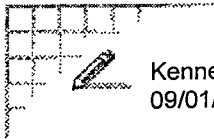
August 25, 2000

- The reconnaissance survey is scheduled for the third week of September (9/18 through 9/22). EPA will have an oversight contractor from Tetra Tech EMI available to provide input on the survey activities, the results of the survey, and potential sampling locations.
- During the survey, Solutia will attempt to delineate groundwater discharge areas in the Mississippi River using indicator parameters (e.g., dissolved oxygen, specific conductivity, temperature, etc).
- Because of potential safety issues associated with river barge traffic, the survey will investigate an area within a few hundred feet of the eastern bank for potential plume discharge sampling locations. This area is located outside the main channel where barge traffic and staging is located. Sampling locations may be appropriate in this area provided that it is representative of the sediment characteristics required for the sampling and analysis program and it is shown to be the main area for discharge of contaminated groundwater.
- Solutia will initiate a water level survey program during the week of August 28<sup>th</sup> to document groundwater flow conditions at the facility. Water levels will be monitored in selected wells monitoring the three aquifers. Wells to be monitored will be along an east-west transect from the Krummrich Plant to the river and a north-south transect along the east bank of the river at Site R. River level data from the U.S. Army Corps of Engineers stations at the Eads Bridge and Engineer Depot will be used. The water level survey program will be used to document whether groundwater is discharging to the Mississippi River prior to and at the time of sampling (sampling is expected to occur the week of October 16).
- To aid in determining the impacts of the groundwater contaminant plume on the Mississippi River, Solutia will consider additional sediment sampling locations for toxicity (bioassay) tests. Only five sample locations are currently proposed for each test.
- Composite fish samples of larger species will typically consist of 3 to 5 individual fish.



- Aniline and herbicides will be analyzed for in the Mississippi River as contaminants of concern. Other SVOCs identified by EPA may also be contaminants of concern.
- Other potential organic groups that may be contaminants of concern are pesticide/PCBs and PCDDs/PCDFs. Solutia may elect to first test for these compounds within the groundwater contaminant plume to determine if they are discharging to the Mississippi River. The wells sampled will be representative of the shallow, middle, and deep aquifers discharging to the Mississippi River in the vicinity of Site R. If extended holding times allow months of preservation prior to the analysis of organics in the water, sediment, and/or biological phase, Solutia will consider obtaining the appropriate sample aliquots at the time of the October sampling program for possible analysis of pesticides/PCBs and PCDDs/PCDFs. Analysis for these organic groups would then be performed if groundwater sampling confirms that they are contaminants of concern.
- Solutia will submit the PCDDs/PCDFs results for the Sauget Sites Area 1 investigation as background information.

**SOLUTIA - 036**



Kenneth Bardo  
09/01/2000 02:58 PM

To: Deborah.I.roush@mvs02.usace.army.mil  
cc:

Subject: River Investigation by Solutia Inc., Sauget, IL

Debbie - It was nice talking to you. I have tried to provide some background information here as you requested. Pursuant to a RCRA corrective action consent order with U.S. EPA, Solutia Inc. located in Sauget, IL is undertaking an investigation along the east side of the Mississippi River in the vicinity of RM 178. A groundwater plume in the Henry Formation aquifer, approximately 3000' wide and contaminated with various volatile/semi-volatile organics, and herbicides is known to be discharging from Solutia Inc. property to the Mississippi River in the vicinity of RM 178.

A reconnaissance survey of the river to be oversighted by EPA 's contractor will be performed the week of September 18 to:

- finalize sampling locations (sampling of water, sediment, benthos, and fish to be conducted the week of October 16);
- finalize the list of selected representative receptor species;
- conduct a fish habitat evaluation;
- select up and down stream reference areas;
- perform a habitat assessment for benthos;
- determine appropriate sampling techniques; and
- sample sediment for physical parameters (TOC, % solids, and grain-size).

EPA is cognizant of the fast flow and dynamic nature of sediment transport in this reach of the Mississippi River and has accessed the Corps September 1998 hydrographic survey on the internet. A series of bars and channels are apparent along the east bank from RM 180.3 to 176.2. Given the nature of the river, EPA seeks input from the Corps to ensure that the proposed investigations of the river are sufficient to determine what ecological impacts, if any, on the Mississippi River are associated with the discharge of the contaminant plume emanating from Solutia property. Some pertinent questions are:

- Has any historical dredging been performed from RM 180.3 to 176.2, especially along the east bank;
- Where might contaminated groundwater from the Henry Formation aquifer be expected to discharge to the Mississippi River (at the bank, near the bank, middle of the river, far bank);
- Is the Corps 1998 hydrographic survey representative of current conditions or should new surveys be performed and, if so, is there a standard protocol;
- Is there any historical chemical analysis of surface water, sediments, and fish in this area;
- Is there any historical habitat evaluation or assessment in this area;
- Are surface ponar grab samples applicable to river sampling here or are core samples or some other sampling method needed for proper characterization;
- What is the general nature of sediments in the river ( sand, gravel, any fine sediments);
- How can EPA best ensure that the sediment sample locations are adequate to quantify contaminants from the groundwater plume discharge.

At your earliest convenience, and preferably in September, EPA and its contractor would like to meet with the Corps to further discuss these questions and access pertinent information that the Corps may have related to this project. My phone number is (312) 886-7566 and e-mail is bardo.kenneth@epa.gov. I look forward to hearing from you. Thanks - Ken

Document #37 – 1 of 2

And

Document #37 – 2 of 2

Are located in folder # 5 and 6

**SOLUTIA - 040**



BSYARE@solutia.com on 09/26/2000 11:32:00 AM

To: Kenneth Bardo cc: camenzie, RJHILL1, AGFAUS  
Subject: WGK- Surface Water Sampling Plan

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Ken

We completed the reconn survey last week as scheduled. This email summarizes our observations and proposed modifications of work plans, etc.

#### SAMPLE LOCATIONS

Rapid turn-around analyses of VOCs were used as an indicator of groundwater discharge areas. These results are attached as an Excel 97 file. Under separate cover I am sending you a sample location map. Samples were collected along three transects.

The northern transect (T1) started approximately 1600 ft south of the six-pack power plant. This is roughly the middle of the Rivers Edge Landfill (Sauget Area 2 Site R). Six samples were collected along this transect. SED1 was collected about 150 feet from the shore line and SED2, SED3, SED4 and SED5 were collected approximately 400 feet apart across the river. Sample SED6 was collected midway between Sample SED1 and SED2.

Transect 2 was located about 500 ft south of T1. SED7 was collected about 150 from shore. SED8 and SED9 were collected approximately 400 and 800 ft, respectively, from SED7.

Transect 3, 600 ft south of T2, is located at the northern end of Sauget Area 2 Site Q. SED10 was collected 150 ft from shore and SED 12 and 13 were collected 400 and 800 ft from SED10. Another sample, SED 11, was collected approximately 500 ft. south of SED10 about 150 ft from shore.

SED14 and SED15 were collected upstream of T1.

#### GROUNDWATER DISCHARGE AREA

Total VOC data indicates that groundwater discharge is occurring adjacent to the shore line, as we anticipated given groundwater flow patterns. A summary of this data is given below:

BANK	T1(NORTH)	T2(CENTER)	T3(SOUTH)
	SED1 644 ppb	SED7 1,300 ppb	SED10 45 ppb SED11 850 ppb
	SED6 854 ppb	SED8 BDL	SED12 473 ppb
	SED2 BDL ppb	SED9 BDL	SED13 1 ppb
	SED3 BDL		

SED4 BDL  
SED5 BDL  
RIVER

Total VOCs for SED14 and SED15 were 11 ppb and BDL, respectively.

We believe this information indicates that groundwater discharge is confined to the near shore area. Consequently, the October sampling program will focus on this area.

#### OTHER OBSERVATIONS

Other observations resulting from the reconn survey are as follows:

- 1) River bottom is mostly sand with a few isolated areas of softer sediments located downstream of piers or other obstructions in the river.
- 2) The commercial fisherman who piloted our boat indicated that we would not find bass or crappie in the river. Species we would find include buffalo, carp, shad and channel catfish.
- 3) Suitable reference areas were found upstream at SED14.
- 4) Suitable reference areas were found downstream in the vicinity of Cahokia Chute.

#### WORK PLAN, FSP and QAPP CHANGES

Based on the results of the reconn survey, we plan to make the following changes in the Work Plan, FSP and QAPP:

1) The presence of two sediment types in the plume discharge area will necessitate sampling both sediment types in the upstream and downstream reference areas. Samples of sand and soft sediment will be collected at both reference areas. Surface water samples will also be collected at each reference area sampling location.

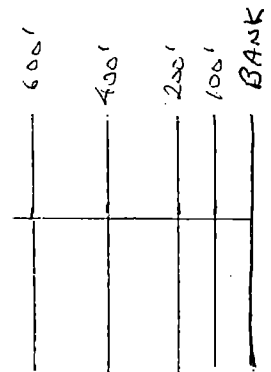
2) Composite samples will be collected at each sediment sampling station rather than a single grab sample. This will insure a more representative sample at each sampling station. For example, five aliquots will be collected along a 300 ft transect parallel to the bank and then composited.

Since VOC samples can not be composited, the sample with the highest concentration as measured by an PID/OVA will be analyzed for VOCs.

3) The types of fish included in the FSP and QAPP will need to change from bass/crappie to rough fish (buffalo/carp) since we will not find the former in the Mississippi River.

4) As directed by your earlier correspondence, we will add pesticides, herbicides, PCBs and dioxin to the analytical parameter list since we can

Parallel transects west  
of bank @ 100', 200', 400' & 600'



Length of at least  
2500'

Composites yield average values which may not accurately describe the distribution of release concentrations or identify hot spots. Limit and only do in conjunction with adequate number of grabs. Also, what about grabs where significant variation with time and space. time-integrated samples

not  
prove their absence in groundwater before we collect the surface water,  
sediment  
and ecological samples during the week of October 16 to 20, 2000.

We are reluctant to do this because the VOC and SVOC analyses allow us to  
identify a group of compounds that are unique to the site, ie chlorobenzenes  
and  
chlorophenols. While the site did manufacture PCBs and dioxin is present in  
pentachlorophenol, which was also manufactured at the site, these compounds  
are  
not unique to Krummrich. Also, data from Sauget Area 1 Support Sampling Plan

(sent under separate cover) indicates that the compounds are present only in  
very low concentrations (ppt to ppq) in groundwater.

Pesticides and herbicides are also not unique indicators of groundwater  
discharge from Krummrich since these compounds were, and are, widely used in  
the  
multi-state agricultural areas upstream of the site.

Are you going to provide us feedback from your oversight contractor before  
we  
get into the field in October? Do we need to meet to discuss whatever  
issues  
are unresolved?

Bruce

*maybe can  
composite certain  
parameters, such as  
pesticides/PCBs and dioxin*



- kr092600.xls



Conversion from salt+water (wet weight) to water (pure water only without sand) = 2.25 (times)

Central Transet

South Transet

	400'	900'	150'	150'	400'	800'	200'	600'
	SED8	SED9	SED10	SED11	SED12	SED13	SED14	SED15
MEK	<2	<2	<2	7	<2	<2	7	<2
cis, 1,2-KE	<2	<2	<2	<2	<2	<2	<2	<2
<del>1,2-KE</del>	<2	<2	<2	35	45	<2	<2	<2
1,2-DCA	<2	<2	<2	<2	<2	<2	<2	<2
TCE	<2	<2	<2	<2	<2	<2	<2	<2
mibk	<2	<2	<2	<2	<2	<2	<2	<2
<del>Toluene</del>	<2	<2	4	8	<2	<2	<2	<2
PCP	<2	<2	<2	<2	<2	<2	<2	<2
<del>CB</del>	<2	<2	20	720	420	1	1	<2
EB	<2	<2	<2	2	<2	<2	<2	<2
m/p-x <sub>y</sub>	<2	<2	<2	1	<2	<2	<2	<2
o-x <sub>y</sub>	<2	<2	<2	1	<2	<2	<2	<2
1,3-DCE	<2	<2	<2	4	<2	<2	<2	<2
<del>1,1,1-DCP</del>	<2	<2	3	55	8	<2	<2	<2
<del>1,2-DCE</del>	<2	<2	17	17	<2	<2	<2	<2
DBCP	<2	<2	<2	<2	<2	<2	<2	<2
TCB	<2	<2	1	<2	<2	<2	<2	<2
N <sub>2</sub> H <sub>4</sub>	<2	<2	<2	<2	<2	<2	3	<2
			45	850	473	1	11	

560  
3500

1700

(26)

87  
(43)  
(11)

77  
44

**SOLUTIA - 041**



**Solutia Inc.**  
W.G. Krummrich Plant  
500 Monsanto Avenue  
Sauget, Illinois 62206-1198  
Tel 618-271-5835

September 27, 2000

Mr. Kenneth Bardo  
U.S. EPA, Region V  
Corrective Action Section  
Enforcement and Compliance Branch  
DE-J9  
77 West Jackson Boulevard  
Chicago, IL 60604-3507

Re: Solutia Inc.- W.G. Krummrich Plant site investigation cost estimate  
(revised)

Per your request Solutia Inc. is submitting a detailed cost estimate for corrective action activities at the W. G. Krummrich Plant.

The following cost estimate is for the ecological risk assessment that will be conducted in the month of October.

Ecological reconnaissance survey	\$ 50,000
Surface Water Sampling	\$150,000
Sample Analysis and Data Management	\$200,000
Report Preparation	\$100,00

For additional details concerning the ecological risk assessment, please refer to the Site Sampling Plan that was submitted on August 5, 2000.

After EPA's review and approval of this cost estimate, Solutia will secure the appropriate financial assurance in the amount of the cost estimate for the ecological risk assessment portion of the corrective action activities.

1. The first step in the process of identifying a problem is to define the problem clearly and concisely.

2. The second step is to gather information about the problem, including its causes, effects, and any relevant data.

If during the course of these investigations it is determined that further work will be required, this cost estimate and the associated financial assurance will be adjusted accordingly.

If you have any questions or comments regarding this cost estimate, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. Hiller". The signature is fluid and cursive, with a long horizontal stroke at the end.

Robert J. Hiller  
Project Manager  
Solutia Inc. - William G. Krummrich Plant

cc: Richard Murawski  
Colleen Michuda  
Bruce Yare

**SÒLUTIA - 043**

**SAMPLING AND ANALYSIS PLAN  
FOR SOLUTIA, INC.  
SAUGET, ILLINOIS**

**Prepared for**

**U.S. Environmental Protection Agency  
Waste, Pesticides, and Toxics Division  
77 West Jackson Boulevard  
Chicago, IL 60604**

Work Assignment No.	:	R05807
EPA Region	:	5
Date Prepared	:	October 18, 2000
Contract No.	:	68-W-99-018
Tetra Tech No.	:	R058071101
Prepared by	:	Tetra Tech EM Inc.
Tetra Tech Project Manager	:	Lisa Graczyk
Telephone No.	:	(312) 856-8721
EPA Work Assignment Manager	:	Brian Freeman
Telephone No.	:	(312) 353-2720



## CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION .....	1
2.0 FACILITY BACKGROUND AND HISTORY .....	1
3.0 OVERALL PROJECT AND QA OBJECTIVES .....	2
3.1 OVERALL PROJECT OBJECTIVES .....	3
3.2 QA OBJECTIVES .....	3
4.0 SAMPLING NETWORK .....	4
4.1 SAMPLE NUMBERS AND SAMPLING LOCATIONS .....	4
4.2 SAMPLE COLLECTION AND FIELD MEASUREMENT PROCEDURES .....	5
5.0 ANALYTICAL PARAMETERS AND METHODS .....	8
6.0 DEVIATIONS FROM QAPP AND SAP .....	8
7.0 PROJECT SCHEDULE .....	8
8.0 KEY PERSONNEL .....	9
REFERENCES .....	10
<u>Appendix</u>	
A ANALYTICAL SERVICES REQUEST FORMS	
B RECONNAISSANCE SURVEY SAMPLING LOCATION MAP	

## TABLES

<u>Table</u>		<u>Page</u>
1	NUMBERS AND TYPES OF SPLIT AND QC SAMPLES .....	6
2	ANALYTICAL PARAMETERS AND METHODS, REQUIRED SAMPLE VOLUMES AND CONTAINERS, PRESERVATIVES, AND HOLDING TIMES .....	7

## **1.0 INTRODUCTION**

Tetra Tech EM Inc. (Tetra Tech) received a technical direction memorandum (TDM) from the U.S. Environmental Protection Agency (EPA) Region 5 on September 26, 2000. The TDM clarifies the scope of work for work assignment (WA) No. R05807 under Tetra Tech's Resource Conservation and Recovery Act (RCRA) Enforcement, Permitting, and Assistance 2 (REPA 2) contract with EPA. The TDM and discussions with the EPA technical advisor require that Tetra Tech collect up to 25 sediment samples from the Mississippi River to assess impacts on the river from releases at the Solutia Inc., W.G. Krummrich Plant (Solutia) facility in Sauget, Illinois. All Tetra Tech samples will be submitted to Severn-Trent Laboratories (STL) in North Canton, Ohio, for analysis.

This sampling and analysis plan (SAP) was prepared in accordance with requirements outlined in Section 1.7 of the quality assurance project plan (QAPP) for the REPA 2 contract. Section 2.0 of the SAP briefly describes the Solutia facility and history. Section 3.0 describes overall project and quality assurance (QA) objectives. Sections 4.0 and 5.0, respectively, identify sampling and analytical requirements for the project. Section 6.0 addresses potential deviations from the REPA 2 QAPP and this SAP. Section 7.0 presents the overall project schedule. Section 8.0 identifies key EPA, Tetra Tech, STL, and Triangle project personnel. A list of references is included at the end of the text. Tetra Tech's analytical service request (ASR) forms are included in Appendix A, and the Reconnaissance Survey Sampling Location map is included in Appendix B.

Tetra Tech's activities under this WA may be limited to collecting and analyzing split samples and reporting the results. Tetra Tech may also collect environmental samples that are not split as deemed necessary by the EPA. All other investigation activities will be conducted under REPA WA No. R05806.

## **2.0 FACILITY BACKGROUND AND HISTORY**

The entire Solutia facility comprises 314 acres and is located at 500 Monsanto Avenue in Sauget, Illinois. Solutia produced industrial chemicals, chemical intermediates, agricultural intermediates, and rubber chemicals at the facility. EPA and Solutia entered into a corrective action Consent Order on

May 3, 2000, which requires Solutia to identify the nature and extent of releases of hazardous waste that pose an unacceptable risk to human health and the environment. The initial investigation will include an assessment of ecological impacts on the Mississippi River due to releases from the Solutia facility. In addition, the investigation may also include an assessment of impacts to human health.

On September 18 and 19, 2000, Menzie-Cura & Associates, Inc. (Menzie-Cura), Solutia's contractor, performed a reconnaissance survey at the site. The purpose of the reconnaissance survey was to (1) identify proper on-site sampling locations for sediment, surface water, fish, and benthic organisms; (2) determine appropriate sampling techniques; (3) assess fish and benthic habitats; (4) identify representative receptor species; and (5) identify proper upstream and downstream reference areas. Menzie-Cura collected sediment samples from 15 locations adjacent to Site R, the River's Edge Landfill, on the Mississippi River (see map in Appendix B) and analyzed the sediment samples for total volatile organic compounds (VOC). Total VOC concentrations ranged from non-detect, or less than 2 parts per billion (ppb), to 1,300 ppb on a wet-weight basis. The water depth ranged from 9 to 22 feet in areas where the samples were collected. The sediment type was predominantly sand or silt. Complete results from the survey are documented in an oversight report prepared for EPA by Tetra Tech (Tetra Tech 2000).

Menzie-Cura will be conducting sampling of environmental media in the Mississippi River in support of a human health and ecological risk assessment the week of October 23, 2000. Contaminated groundwater from the Solutia facility discharges to the Mississippi River, and the impacts on surface water, sediment, benthos, and fish need to be evaluated. Constituents of concern include VOCs, semivolatile organic compounds (SVOC), pesticides, polychlorinated biphenyls (PCB), and herbicides.

### **3.0 OVERALL PROJECT AND QA OBJECTIVES**

This section summarizes the overall project and QA objectives.

### 3.1

## OVERALL PROJECT OBJECTIVES

The project objectives for sediment split sampling at the Solutia facility are to (1) collect split samples that are representative of actual field conditions and comparable to the Solutia samples, (2) analyze the samples using procedures equivalent to those used by Solutia, and (3) perform an independent data quality assessment of Solutia's analytical results. The laboratory data generated from Tetra Tech's split sampling effort will be compared to the data generated by Solutia's laboratory. The analytical results for split samples will be used as an external quality assurance (QA) measure to verify the analytical results obtained by Solutia's laboratory. If EPA determines that the differences between the split sample results and Solutia results are significant, further action such as resampling or data re-evaluation may be required.

The project objectives for nonsplit sediment sampling at the Solutia facility are to (1) fill data gaps determined through discussions with EPA and (2) analyze the nonsplit samples for the constituents of concern discussed in Section 2.0. EPA may not determine whether to collect nonsplit samples until Tetra Tech is in the field.

The exact number and locations of sediment samples has not yet been determined because Tetra Tech and EPA have not yet received the Menzie-Cura SAP.

The project objectives will be accomplished by performing the tasks described below.

- Menzie-Cura will collect sediment samples from the Mississippi River, and Tetra Tech will provide sample jars for Menzie-Cura to fill for analysis by the Tetra Tech procured laboratory STL.
- STL's North Canton, Ohio, laboratory will analyze the samples using the methods specified in Table 2 and in accordance with STL's standard operating procedures (SOP).

Further information on the proposed sampling network is provided in Section 4.0 of this SAP.

### 3.2

### QA OBJECTIVES

The primary QA objective for the project is to implement sampling, chain-of-custody, and laboratory procedures that will provide data that are legally defensible in a court of law. Split sample analytical results must be precise and accurate and are expected to be comparable to the data generated by Solutia's laboratory. The specific QA objectives for each analytical method are described in the ASR forms in the appendix to this SAP. Most samples will be analyzed in accordance with methods in "Test Methods for Evaluating Solid Waste" (SW-846) (EPA 1996) as discussed in Section 5.0.

Tetra Tech will also collect matrix spike and matrix spike duplicate (MS/MSD) samples for quality control (QC) analysis. MS/MSD samples will be collected at a frequency of 1 for each group of 20 or fewer investigative samples. For sediment sample analyses, no extra sample volume is required for those samples designated for MS/MSD analysis.

Tetra Tech will collect one equipment rinsate blank sample for every 20 investigative sediment samples collected, and 1 field duplicate sample for every 10 investigative sediment samples collected.

To assess the completeness of the data generated, percent completeness will be calculated in accordance with the REPA 2 QAPP (Tetra Tech 1999). The laboratory completeness goal for the project will be 100 percent valid data for the number of samples actually collected. Completeness will be determined separately for each group of analytical parameters.

To further ensure data quality, Tetra Tech will follow the chain-of-custody procedures discussed in the REPA 2 QAPP (Tetra Tech 1999). STL will follow its own internal laboratory chain-of-custody SOP when it receives samples.

## 4.0 SAMPLING NETWORK

The investigation activities for the Solutia facility are scheduled to begin on October 23, 2000. This section discusses the sampling network to be used at the Solutia facility, including the sample numbers, sampling locations, and sample collection and field measurement procedures.

#### **4.1**

#### **SAMPLE NUMBERS AND SAMPLING LOCATIONS**

Tetra Tech will oversee sediment sampling activities during the investigation and will collect up to 25 split and nonsplit sediment samples. Table 1 lists the numbers and types of investigative and QC samples that Tetra Tech will collect, organized by sample matrix and analytical parameter. Table 2 lists the analytical methods, sample volumes and containers, preservation requirements, and holding time requirements for each split sample. As Table 2 indicates, most of the sample volumes for the analytical parameters can be combined into two 16-ounce containers. Only VOC and grain size analyses require separate containers. EPA has directed Tetra Tech to collect up to 25 sediment samples, split or nonsplit, from the Mississippi River at the Solutia facility. The sediment samples will be analyzed for Appendix IX VOCs, SVOCs, pesticides, PCBs, and herbicides; grain size, total organic carbon, and total solids will also be determined.

Sampling locations have not been determined because Tetra Tech and EPA have not yet received Menzie-Cura's SAP.

#### **4.2**

#### **SAMPLE COLLECTION AND FIELD MEASUREMENT PROCEDURES**

Detailed sampling procedures to be used during the investigation will be described in Solutia's SAP which has not yet been received. Menzie-Cura, will use a boat equipped with either a Van Veen grab sampler or a ponar dredge grab sampler. From discussions with Menzie-Cura, if nonsplit sediment samples are collected, Menzie-Cura is to collect the samples for Tetra Tech using Menzie-Cura equipment. Tetra Tech will inform Menzie-Cura of the locations of the nonsplit samples. Menzie-Cura personnel will provide Tetra Tech with split or nonsplit sediment samples by filling the Tetra Tech sample container for a given parameter. Sample containers for VOC analysis will be filled first, followed by the containers for all other analyses in no particular order.

Tetra Tech will not collect field measurements at sampling locations. Menzie-Cura will collect field measurements required for sample screening, and Tetra Tech will record the measurements in a field logbook.

**TABLE 1**  
**NUMBERS AND TYPES OF SPLIT AND QC SAMPLES**

Matrix	Parameter <sup>a</sup>	Number of Samples	Number of MS/MSD Samples <sup>b</sup>	Number of Field Duplicate Samples	Number of Equipment Rinsate Samples	Total Number of Samples
Sediment	VOCs	20	1	2	1	24
	SVOCs <sup>c</sup>	20	1	2	1	24
	Organochlorine pesticides	20	1	2	1	24
	Organophosphate pesticides	20	1	2	1	24
	PCBs	20	1	2	1	24
	Herbicides	20	1	2	1	24
	Total organic carbon	20	1	2	1	24
	Total solids	20	1	2	1	24
	Grain size	20	1	2	1	24

**Notes:**

MS/MSD = Matrix spike/matrix spike duplicate  
 PCB = Polychlorinated biphenyl  
 SVOC = Semivolatile organic compound  
 VOC = Volatile organic compound

- <sup>a</sup> The parameters listed include analytes in subsets of the Appendix IX analyte list.
- <sup>b</sup> One MS/MSD sample will be collected for each analytical parameter. This frequency complies with the minimum frequency specified in the REPA generic QAPP (one for each 20 or fewer investigative samples from each matrix).
- <sup>c</sup> In addition to Appendix IX SVOCs, the following SVOCs will be identified as tentatively identified compounds: 2-chloroaniline, 3-chloroaniline, 2-nitrochlorobenzene, 3-nitrochlorobenzene, 4-nitrochlorobenzene, benzoic acid, 2,4-dinitrochlorobenzene, 3,4-dinitrochlorobenzene, 2-nitrobiphenyl, and 4-nitrobiphenyl.



TABLE 2

**ANALYTICAL PARAMETERS AND METHODS,  
REQUIRED SAMPLE VOLUMES AND CONTAINERS,  
PRESERVATIVES, AND HOLDING TIMES**

Matrix	Parameter	Preparation/ Extraction Method	Analytical Method	Sample Volume and Container	Preservative	Holding Time
Sediment	VOCs	5035 <sup>a</sup>	8260B <sup>a</sup>	Three 5-gram EnCore™ sample containers and one 2-ounce glass jar with Teflon-lined cap <sup>e</sup>	Store at 4 °C; preserve with methanol within 48 hours	14 days
	SVOCs	3550 <sup>a</sup>	8270C <sup>a</sup>	Two 16-ounce glass jars with Teflon-lined cap	Store at 4 °C	14 days to extraction; 40 days to analysis
	Organochlorine pesticides	3550 <sup>a</sup>	8081A <sup>a</sup>			
	Organophosphate pesticides	3540 <sup>a</sup>	8141A <sup>a</sup>			
	PCBs	3550 <sup>a</sup>	8082 <sup>a</sup>			
	Herbicides	3550 <sup>a</sup>	8151A <sup>a</sup>			
	Total organic carbon	NA	Walkley-Black <sup>b</sup>		NA	NA
	Total solids	NA	160.3 <sup>c</sup>		NA	NA
	Grain size	NA	D-422 <sup>d</sup>	One 16-ounce glass jars with Teflon-lined cap	NA	NA

## Notes:

NA = Not applicable

PCB = Polychlorinated biphenyl

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

<sup>a</sup> Methods listed are from EPA's "Test Methods for Evaluating Solid Waste" (SW-846) (EPA 1996).

<sup>b</sup> Nelson, D.W., and L. E. Sommers. 1996. "Total Carbon, Organic Carbon, and Organic Matter." In J. M. Bartels, Managing Editor, *Methods of Soil Analysis. Part 3, Chemical Methods*. Madison, Wisconsin. Soil Science Society of America.

<sup>c</sup> EPA. 1983. "Methods for Chemical Analysis of Water and Wastes." March.

<sup>d</sup> ASTM. 2000a. "Annual Book of ASTM Standards, Volume 4.08: Soil and Rock (I)." April.

<sup>e</sup> A 2-ounce jar is to be collected with the EnCore™ sample containers as a contingency in case the sediment sample is too wet and does not stay in the EnCore™ sample container.

## **5.0 ANALYTICAL PARAMETERS AND METHODS**

The laboratory will analyze samples in accordance with the procedures outlined in its SOPs. STL will analyze samples for Appendix IX VOCs using SW-846 Method 8260B; Appendix IX SVOCs using SW-846 Method 8270C; PCBs using SW-846 Method 8082; Appendix IX pesticides using SW-846 Methods 8081A and 8141A; Appendix IX herbicides using SW-846 method 8151A; total organic carbon using the Walkley-Black method; total solids using EPA Method 160.3 (EPA 1983); and grain size using American Society for Testing and Materials (ASTM) Method D-422 (ASTM 2000).

## **6.0 DEVIATIONS FROM QAPP AND SAP**

Tetra Tech will adhere as closely as possible to the REPA 2 generic QAPP and this SAP during split sample collection and analysis. Tetra Tech will document any deviations from the REPA 2 generic QAPP and this SAP in a field logbook and will discuss the deviations with the EPA corrective action project manager. In addition, Tetra Tech will discuss any deviations in the data validation report that summarizes split sample analytical results. Tetra Tech will submit the data validation report to EPA upon completion of the sampling and analysis project.

## **7.0 PROJECT SCHEDULE**

The investigation activities for the Solutia facility are scheduled to begin on October 23, 2000, and Tetra Tech will collect split samples beginning on this date. The sampling is expected to take one week.

Tetra Tech anticipates receiving split sample analytical data for each sampling event from the laboratories within 30 days of sample shipment. Tetra Tech will validate split sample analytical results as the results are received from the laboratories. Tetra Tech will also provide EPA with copies of the analytical results as they are received. After all split sample analytical results have been received and validated, Tetra Tech will prepare a data validation report. Tetra Tech will submit the data validation report to EPA within 25 days after receiving the final data packages from the laboratories.

## 8.0 KEY PERSONNEL

The organizations participating directly in the project include EPA, Tetra Tech, Solutia, Menzie-Cura, and STL. Addresses and telephone numbers for key project personnel serving as contacts for these organizations are listed below.

### EPA Work Assignment Manager

Brian Freeman  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604  
Telephone: (312) 353-2720  
Fax: (312) 353-4788

### Tetra Tech Project Manager

Lisa Graczyk  
Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
Telephone: (312) 856-8721  
Fax: (312) 938-0118

### Solutia Project Coordinator

Bruce S. Yare  
Manager, Remediation Technology  
575 Maryville Centre Drive  
St. Louis, MO 63141  
Telephone : (314) 674-6370  
Fax: (314) 674-8957

### EPA Technical Advisor

Kenneth Bardo  
U.S. Environmental Protection Agency Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604  
Telephone: (312) 886-7566  
Fax: (312) 353-4788

### STL Contact

Jeff Smith  
Severn-Trent Laboratories  
4101 Shuffel Drive  
North Canton, OH 44720  
Telephone: (330) 966-7290  
Fax: (330) 497-0772

### Menzie-Cura Contact

W. Theodore Wickwire  
Menzie-Cura & Associates, Inc.  
1 Courthouse Lane, Suite 2  
Chelmsford, MA 01824-1734  
Telephone: (978) 453-4300  
Fax: (978) 453-7260

## REFERENCES

- American Society for Testing and Materials (ASTM). 2000. "Annual Book of ASTM Standards, Volume 4.08: Soil and Rock (I)." April.
- Nelson, D.W., and L. E. Sommers. 1996. "Total Carbon, Organic Carbon, and Organic Matter." In J. M. Bartels, Managing Editor, *Methods of Soil Analysis. Part 3, Chemical Methods*. Madison, Wisconsin. Soil Science Society of America.
- Tetra Tech EM Inc. (Tetra Tech). 2000. "Field Oversight Summary for September 18 through 20, 2000, Solutia, Inc., W.G. Krummrich Plant, Sauget, Illinois."
- Tetra Tech. 1999. "RCRA Enforcement, Permitting, and Assistance 2 Contract Quality Assurance Project Plan (QAPP)."
- U.S. Environmental Protection Agency (EPA). 1983. "Methods for Chemical Analysis of Water and Wastes." March.
- EPA. 1996. "Test Methods for Evaluating Solid Waste." SW-846, Third Edition, Final Update III. Office of Solid Waste and Emergency Response. Washington, DC. December.
- EPA. 2000. Technical Direction Memorandum. Regarding Solutia, Inc. EPA Contract Number 68-W-99-018. Work assignment number R05807, Sampling and Analysis. September 26.

**APPENDIX A**  
**ANALYTICAL SERVICE REQUEST FORMS**  
(26 Sheets)

- Request for Analytical Services: 8260B
- Request for Analytical Services: 8270C
- Request for Analytical Services: 8081A
- Request for Analytical Services: 8141A
- Request for Analytical Services: 8082
- Request for Analytical Services: 8151A
- Request for Analytical Services: D-422, Walkley-Black, and 160.3

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

Request Number

G9001-OR058071104

**Request for  
ANALYTICAL SERVICES**

A. EPA Region/ Client: Region 5/Tetra Tech EM Inc. (Tetra Tech)  
B. Contractor Representative: Lisa Graczyk  
C. Telephone Number: (312) 856-8721  
D. Date of Request: October 10, 2000  
E. Facility Name: MR Sampling  
F. Work Assignment No. G9001-OR058071104

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by Quanterra Environmental Services under the RCRA Enforcement, Permitting and Assistance 2(REPA2) contract.

1. **General description of analytical service requested:** Analysis of sediment samples and equipment rinsate blanks for volatile organic compounds (VOC) by SW-846 Method 8260B. Report sediment sample results on a dry weight basis.
2. **Definition and number of work units involved:** Twenty-five (25) sediment samples for VOC analysis plus one to two equipment rinsate blanks for VOC analysis. Each sample will consist of one four-ounce glass jar.
3. **Purposes of analysis:** Phase I RCRA facility investigation
4. **Estimated date(s) of collection:** Sediment samples are anticipated to be collected during the week of October 23, 2000.
5. **Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.
6. **Maximum holding time and number of days after laboratory receipt of samples for receipt of data:**  
Samples should be preserved in the laboratory within 48 hours of collection. Preserved samples should be analyzed within 14 days of receipt. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt.
7. **Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment may be recommended if a method other than the one specified in this request is used.  
  
Prepare samples using extraction option in Method 5035. Analyze for VOCs using Method 8260B. Target parameters are listed under "I. Data Requirements" below. However, STL should report all analytes that it routinely quantifies as part of Method 8260B analyses.
8. **Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days.

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.**

Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

10. **Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 E. Randolph Drive, Suite 4700  
Chicago, IL 60601

11. **Name of sampling/shipping contact:** Lisa Graczyk

**Office Phone:**

(312) 856-8721

**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)	Precision Desired
Target parameters are those VOCs listed in Appendix IX to 40 CFR Part 264.	Laboratory reporting limits are acceptable.	Within laboratory control limits for % RPD (all parameters)

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Initial  Every 12 hours	RF for SPCCs in compliance with Section 7.3.5.4 of method RSD for CCCs $\leq$ 30% RF for SPCCs in compliance with Section 7.3.5.4 of method %D for CCCs $\leq$ 20%
Laboratory blank	Once per group of 20 or fewer samples	< PQL for target parameters
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Laboratory control sample recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate spike recovery	Every sample, spike, and blank	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the minimum response factors for the SPCCs are not met, the system must be evaluated, and corrective action must be taken before sample analysis begins. Possible problems include standard mixture degradation, injection port inlet contamination, contamination at the front end of the analytical column, and active sites in the column or chromatographic system. SPCC criteria must be met before sample analysis begins.

If any CCC does not meet the 20% difference criterion, corrective action must be taken prior to analysis of any samples. Problems similar to those listed above for SPCCs could affect CCCs. If the source of the problem can not be corrected, a new five-point calibration must be generated and CCC criteria met before sample analysis begins.

### Surrogates

If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations, surrogate solutions, and internal standards. Also check instrument performance.
- Reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."



#### Matrix Spike/Matrix Spike Duplicate

MS/MSD limits are advisory. If limits are not met, no further action by the laboratory is required, but data should be flagged as appropriate. Frequent failure to meet the limits for % recovery or RPD warrant investigation by the laboratory, and may result in questions from the Contractor.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

Request Number

G9001-OR058071104

**Request for  
ANALYTICAL SERVICES**

A. EPA Region/ Client:	Region 5/Tetra Tech EM Inc. (Tetra Tech)
B. Contractor Representative:	Lisa Graczyk
C. Telephone Number:	(312) 856-8721
D. Date of Request:	October 10, 2000
E. Facility Name:	MR Sampling
F. Work Assignment No.	G9001-OR058071104

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by STL Environmental Services under the RCRA Enforcement, Permitting and Assistance 2(REPA2) contract.

1. **General description of analytical service requested:** Analysis of sediment samples and equipment rinsate samples for Appendix IX semivolatile organic compounds (SVOC) by SW-846 Method 8270C. In addition to the Appendix IX SVOC compounds, the following are to be reported as TICs if found: 2-chloroaniline, 3-chloroaniline, 2-nitrochlorobenzene, 3-nitrochlorobenzene, 4-nitrochlorobenzene, benzoic acid, 2,4-dinitrochlorobenzene, 3,4-dinitrochlorobenzene, 2-nitrobiphenyl, and 4-nitrobiphenyl. Report results for sediment samples on a dry weight basis.
2. **Definition and number of work units involved:** Twenty-five (25) samples for SVOC analysis.
3. **Purposes of analysis:** Phase I RCRA facility investigation
4. **Estimated date(s) of collection:** Samples will be collected in October 2000.
5. **Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.
6. **Maximum holding time and number of days after laboratory receipt of samples for receipt of data:**  
Extract sediment samples within 14 days of collection; extract water samples within 7 days of collection. Analyze all samples within 40 days of extraction. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt. Note that reporting requirements are more stringent than holding times.
7. **Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment may be recommended if a method other than the one specified in this request is used.  
  
Prepare solid samples by Method 3550B or other appropriate extraction method; prepare liquid samples by Method 3520C or other appropriate extraction method. Analyze for target SVOCs using Method 8270C. Target parameters are listed under "I. Data Requirements" below. However, STL should report results for any organochlorine and organophosphorus pesticides for which it has established Method 8270C detection limit. In addition, STL should report results for up to 20 tentatively identified compounds (TIC) for each analysis.
8. **Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 180 days.

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.**

Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

10. **Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 E. Randolph Drive, Suite 4700  
Chicago, IL 60601

11. **Name of sampling/shipping contact:** Lisa Graczyk

**Office Phone:**

(312) 856-8721

**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)	Precision Desired
Target parameters are those SVOCs listed in Appendix IX to 40 CFR Part 264 and the following as TICs: 2-chloroaniline, 3-chloroaniline, 2-nitrochlorobenzene, 3-nitrochlorobenzene, 4-nitrochlorobenzene, benzoic acid, 2,4-dinitrochlorobenzene, 3,4-dinitrochlorobenzene, 2-nitrobiphenyl, and 4-nitrobiphenyl.	Laboratory reporting limits are acceptable.	Within laboratory control limits for % RPD (all parameters)

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Initial  Every 12 hours	RF for SPCCs $\geq$ 0.050 RSD for CCCs $\leq$ 30% RF for SPCCs $\geq$ 0.050 %D for CCCs $\leq$ 20%
Laboratory blank	Once per group of 20 or fewer samples	< PQL for target parameters
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Laboratory control sample recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate spike recovery	Every sample, spike, and blank	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the minimum response factors for the SPCCs are not met, the system must be evaluated, and corrective action must be taken before sample analysis begins. Possible problems include standard mixture degradation, injection port inlet contamination, contamination at the front end of the analytical column, and active sites in the column or chromatographic system. SPCC criteria must be met before sample analysis begins.

If any CCC does not meet the 20% difference criterion, corrective action must be taken prior to analysis of any samples. Problems similar to those listed above for SPCCs could affect CCCs. If the source of the problem can not be corrected, a new five-point calibration must be generated and CCC criteria met before sample analysis begins.

### Surrogates

If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations, surrogate solutions, and internal standards. Also check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveals a problem.
- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."

Matrix Spike/Matrix Spike Duplicate

MS/MSD limits are advisory. If limits are not met, no further action by the laboratory is required, but data should be flagged as appropriate. Frequent failure to meet the limits for % recovery or RPD warrant investigation by the laboratory, and may result in questions from the Contractor.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

Request Number

G9001-OR058071104

**Request for  
ANALYTICAL SERVICES**

A. EPA Region/ Client: Region 5/Tetra Tech EM Inc. (Tetra Tech)  
B. Contractor Representative: Lisa Graczyk  
C. Telephone Number: (312) 856-8721  
D. Date of Request: October 10, 2000  
E. Facility Name: MR Sampling  
F. Work Assignment No. G9001-OR058071104

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by Quanterra Environmental Services under the RCRA Enforcement, Permitting and Assistance (REPA) contract.

**1. General description of analytical service requested:**

Analysis of sediment samples for organochlorine pesticides by SW-846 Method 8081A. Report results on a dry weight basis.

**2. Definition and number of work units involved:** Twenty five (25) samples for organochlorine pesticides analysis. Total includes equipment rinsate blanks.

**3. Purposes of analysis:** Phase I RCRA facility investigation

**4. Estimated date(s) of collection:** Sediment samples will be collected in October 2000.

**5. Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.

**6. Maximum holding time and number of days after laboratory receipt of samples for receipt of data:** Extract samples within 14 days of receipt; analyze within 40 days of extraction. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt. Note that reporting requirements are more stringent than holding times.

**7. Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment will be recommended if a method other than the one specified in this request is used.

Prepare samples by Methods 3540C, 3541, or 3550B, then analyze for organochlorine pesticides using Method 8081A. Target parameters are listed under "I. Data Requirements" below. However, STL should report all analytes that it routinely quantifies as part of Method 8081A analyses.

**8. Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 365 days.

**9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.):** If not completed, format of results will be left to laboratory discretion. Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

**10. Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601

- 11. Name of sampling/shipping contact:** Lisa Graczyk  
**Office Phone:** (312) 856-8721  
**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)	Precision Desired
Aldrin	0.33 µg/kg	50 % RPD (all parameters)
α-BHC	0.33 µg/kg	
β-BHC	0.33 µg/kg	
δ-BHC	0.33 µg/kg	
gamma-BHC/Lindane	0.33 µg/kg	
4,4'-DDD	0.67 µg/kg	
4,4'-DDE	0.67 µg/kg	
4,4'-DDT	0.67 µg/kg	
Dieldrin	0.67 µg/kg	
Endosulfan I	0.33 µg/kg	
Endosulfan II	0.67 µg/kg	
Endosulfan sulfate	0.67 µg/kg	
Endrin	0.67 µg/kg	
Endrin aldehyde	0.67 µg/kg	
Heptachlor	0.33 µg/kg	
Heptachlor epoxide	0.33 µg/kg	
Methoxychlor	3.3 µg/kg	
Toxaphene	33 µg/kg	
Chlordane	0.33 µg/kg	

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Daily	%RSD ≤ 20% %D ≤ ± 15%
Laboratory blank	Each batch of samples (max of 20 samples per matrix)	≤ PQL
Laboratory control sample recovery	Each batch of samples (max of 20 samples per matrix)	Within laboratory control limits
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate spike recovery	Each sample, blank, and spike	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the response for any analyte varies for the predicted response by more than ± 15%, a new calibration curve must be prepared for that analyte.

### Surrogates



If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations, surrogate solutions, and internal standards. Also check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveals a problem.
- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration".

#### GC Analysis

If the response exceeds the linear range of the system, the extract should be diluted and reanalyzed. If peak detection is prevented by the presence of interferences, further cleanup is required.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

**Request Number**

G9001-OR058071104

**Request for  
ANALYTICAL SERVICES**

A. EPA Region/ Client: Region 5/Tetra Tech EM Inc. (Tetra Tech)  
B. Contractor Representative: Lisa Graczyk  
C. Telephone Number: (312) 856-8721  
D. Date of Request: October 10, 2000  
E. Facility Name: MR Sampling  
F. Work Assignment No. G9001-OR058071104

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by Quanterra Environmental Services under the RCRA Enforcement, Permitting and Assistance (REPA) contract.

**1. General description of analytical service requested:**

Analysis of sediment samples for organophosphorus pesticides by SW-846 Method 8141A. Report results on a dry weight basis.

**2. Definition and number of work units involved:** Twenty five (25) samples for organophosphorus pesticides analysis. Total includes equipment rinsate blanks.

**3. Purposes of analysis:** Phase I RCRA facility investigation

**4. Estimated date(s) of collection:** Sediment samples will be collected in October 2000.

**5. Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.

**6. Maximum holding time and number of days after laboratory receipt of samples for receipt of data:**

Extract samples within 14 days of receipt; analyze within 40 days of extraction. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt. Note that reporting requirements are more stringent than holding times.

**7. Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment will be recommended if a method other than the one specified in this request is used.

Prepare samples by Methods 3540C, 3541, or 3550B, then analyze for organophosphorus pesticides using Method 8141A. Target parameters are listed under "I. Data Requirements" below. However, STL should report all analytes that it routinely quantifies as part of Method 8141A analyses.

**8. Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 365 days.

**9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.**

Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

**10. Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601

**11. Name of sampling/shipping contact:** Lisa Graczyk

**Office Phone:**

(312) 856-8721

**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)	Precision Desired
Dimethoate	33 µg/kg	50 % RPD (all parameters)
Disulfoton	33 µg/kg	
Famphur	33 µg/kg	
Methyl parathion	33 µg/kg	
Parathion	33 µg/kg	
Phorate	33 µg/kg	
Tetraethyldithiopyrophosphate	33 µg/kg	
Thionazin	33 µg/kg	
o,o,o-triethylphosphorothioate	33 µg/kg	

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Daily	%RSD $\leq$ 20% %D $\leq \pm$ 15%
Laboratory blank	Each batch of samples (max of 20 samples per matrix)	$\leq$ PQL
Laboratory control sample recovery	Each batch of samples (max of 20 samples per matrix)	Within laboratory control limits
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate spike recovery	Each sample, blank, and spike	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the response for any analyte varies for the predicted response by more than  $\pm$  15%, a new calibration curve must be prepared for that analyte.

### Surrogates

If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations, surrogate solutions, and internal standards. Also check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveals a problem.
- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration".

### GC Analysis

If the response exceeds the linear range of the system, the extract should be diluted and reanalyzed. If peak detection is prevented by the presence of interferences, further cleanup is required.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

Request Number

G9001-OR058071104

**Request for  
ANALYTICAL SERVICES**

<b>A.</b>	EPA Region/ Client:	<u>Region 5/Tetra Tech EM Inc. (Tetra Tech)</u>
<b>B.</b>	Contractor Representative:	<u>Lisa Graczyk</u>
<b>C.</b>	Telephone Number:	<u>(312) 856-8721</u>
<b>D.</b>	Date of Request:	<u>October 10, 2000</u>
<b>E.</b>	Facility Name:	<u>MR Sampling</u>
<b>F.</b>	Work Assignment No.	<u>G9001-OR058071104</u>

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by STL under the RCRA Enforcement, Permitting and Assistance 2(REPA2) contract.

1. **General description of analytical service requested:** Analysis of sediment and equipment rinsate samples for polychlorinated biphenyls (PCB) by SW-846 Method 8082. Report results for sediment samples on a dry weight basis.
2. **Definition and number of work units involved:** Twenty five (25) samples for PCB analysis. Total includes equipment rinsate samples.
3. **Purposes of analysis:** Phase I RCRA facility investigation
4. **Estimated date(s) of collection:** Samples will be collected in October 2000.
5. **Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.
6. **Maximum holding time and number of days after laboratory receipt of samples for receipt of data:**  
Extract sediment samples within 14 days of collection; extract water samples within 7 days of collection. Analyze all samples within 40 days of extraction. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt. Note that reporting requirements are more stringent than holding times.
7. **Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment may be recommended if a method other than the one specified in this request is used.  
  
Prepare solid samples by Method 3540C, Method 3541, or another appropriate method; prepare liquid samples by Method 3510C, 3520C, or another appropriate method. Analyze for PCBs using Method 8082. Target parameters are listed under "I. Data Requirements" below.
8. **Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 180 days.
9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.**  
Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

**10. Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 E. Randolph Drive, Suite 4700  
Chicago, IL 60601

**11. Name of sampling/shipping contact:** Lisa Graczyk

**Office Phone:**

(312) 856-8721

**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)		Precision Desired
	Soil and Sediment	Groundwater and Surface Water	
Aroclor 1016	33 µg/kg	0.5 µg/L	50 % RPD (all parameters)
Aroclor 1221	33 µg/kg	0.5 µg/L	
Aroclor 1232	33 µg/kg	0.5 µg/L	
Aroclor 1242	33 µg/kg	0.5 µg/L	
Aroclor 1248	33 µg/kg	0.5 µg/L	
Aroclor 1254	33 µg/kg	0.5 µg/L	
Aroclor 1260	33 µg/kg	0.5 µg/L	

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Daily	%RSD $\leq$ 20% %D $\leq \pm$ 15%
Laboratory blank	Each batch of samples (max of 20 samples per matrix)	$\leq$ PQL
Laboratory control sample recovery	Each batch of samples (max of 20 samples per matrix)	Within laboratory control limits
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate recovery	Each sample, blank, and spike	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the response for any analyte varies for the predicted response by more than  $\pm$  15% a new calibration curve must be prepared for that analyte.

### Surrogates

If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations and surrogate solutions. Also check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveals a problem.
- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."



### GC Analysis

If the response exceeds the linear range of the system, the extract should be diluted and reanalyzed. If peak detection is prevented by the presence of interferences, further cleanup is required.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
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**Request Number**

G9001-OR058071104

***Request for***  
**ANALYTICAL SERVICES**

<b>A.</b>	EPA Region/ Client:	<u>Region 5/Tetra Tech EM Inc. (Tetra Tech)</u>
<b>B.</b>	Contractor Representative:	<u>Lisa Graczyk</u>
<b>C.</b>	Telephone Number:	<u>(312) 856-8721</u>
<b>D.</b>	Date of Request:	<u>October 10, 2000</u>
<b>E.</b>	Facility Name:	<u>MR Sampling</u>
<b>F.</b>	Work Assignment No.	<u>G9001-OR058071104</u>

Provided below is a description of requested analytical services to be procured by Tetra Tech and performed by Quanterra Environmental Services under the RCRA Enforcement, Permitting and Assistance (REPA) contract.

**1. General description of analytical service requested:**

Analysis of sediment samples for herbicides by SW-846 Method 8151A. Report results on a dry weight basis.

**2. Definition and number of work units involved:** Twenty five (25) samples for herbicides analysis. Total includes equipment rinsate blanks.

**3. Purposes of analysis:** Phase I RCRA facility investigation

**4. Estimated date(s) of collection:** Sediment samples will be collected in October 2000.

**5. Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify STL of all sample shipments.

**6. Maximum holding time and number of days after laboratory receipt of samples for receipt of data:**

Extract samples within 14 days of receipt; analyze within 40 days of extraction. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt. Note that reporting requirements are more stringent than holding times.

**7. Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment will be recommended if a method other than the one specified in this request is used.

Prepare samples by Methods 3540C, 3541, or 3550B, then analyze for herbicides using Method 8151A. Target parameters are listed under "I. Data Requirements" below. However, STL should report all analytes that it routinely quantifies as part of Method 8151A analyses.

**8. Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 365 days.

**9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.**

Summarize results of all investigative and quality control samples as specified in Section 9.3 of Tetra Tech's REPA Generic QAPP.

STL's data package should include the following items: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

**10. Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

Data Package Recipient Address:

Lisa Graczyk  
Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601

**11. Name of sampling/shipping contact:** Lisa Graczyk

**Office Phone:**

(312) 856-8721

**(Optional) Field Phone:**

## I. DATA REQUIREMENTS

Parameter	Practical Quantitation Limit (PQL)	Precision Desired
pentachlorophenol 2,4-D 2,4-DB 2,4,5-TP/Silvex 2,4,5-T Dalapon Dicamba Dichlorprop Dinoseb MPCA MCPD	Laboratory reporting limits are acceptable.	50 % RPD (all parameters)

## II. QC REQUIREMENTS

Type	Frequency	QC Limits
Calibration	Daily	%RSD $\leq$ 20% %D $\leq \pm$ 15%
Laboratory blank	Each batch of samples (max of 20 samples per matrix)	$\leq$ PQL
Laboratory control sample recovery	Each batch of samples (max of 20 samples per matrix)	Within laboratory control limits
Matrix spike recovery	Once per group of 20 or fewer samples	Within laboratory control limits
Surrogate spike recovery	Each sample, blank, and spike	Within laboratory control limits

## III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Follow actions specified in the methods. Contact the Tetra Tech project manager or designee (see Item 11) if any unusual problems occur.

### Calibration

If the response for any analyte varies for the predicted response by more than  $\pm$  15%, a new calibration curve must be prepared for that analyte.

### Surrogates

If the surrogate recoveries are not within the limits established by the laboratory, then the following procedures are required:

- Check to be sure there are no error in calculations, surrogate solutions, and internal standards. Also check instrument performance.
- Recalculate the data and/or reanalyze the extract if any of the above checks reveals a problem.

- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration".

#### GC Analysis

If the response exceeds the linear range of the system, the extract should be diluted and reanalyzed. If peak detection is prevented by the presence of interferences, further cleanup is required.

Tetra Tech EM Inc.  
200 East Randolph Drive, Suite 4700  
Chicago, IL 60601  
PHONE: (312) 856-8700 or FAX 938-0118

Request Number

G9001-OR058071103

**Request for  
SPECIAL ANALYTICAL SERVICES**

A. EPA Region/ Client:	<u>Region 5/Tetra Tech EM Inc. (Tetra Tech)</u>
B. Contractor Representative:	<u>Lisa Graczyk</u>
C. Telephone Number:	<u>(312) 856-8721</u>
D. Date of Request:	<u>October 12, 2000</u>
E. Facility Name:	<u>MR Sampling</u>
F. Work Assignment No.	<u>G9001-OR058071103</u>

Provided below is a description of requested analytical services to be procured by Tetra Tech.

**1. General description of analytical service requested:**

Analysis of sediment samples for grain size by ASTM Method D-422, total organic carbon (TOC) by Walkley-Black, and total solids by EPA Method 160.3.

**2. Definition and number of work units involved:** Tetra Tech estimates 25 sediment samples for grain size, TOC, and total solids. Total includes investigative and QC samples

**3. Purposes of analysis:** Impacts to river.

**4. Estimated date(s) of collection:** Samples will be collected in October 2000..

**5. Estimated date(s) and method of shipment:** Tetra Tech will ship samples on the dates of collection via FedEx for overnight delivery. Tetra Tech will notify the laboratory of all sample shipments.

**6. Maximum holding time and number of days after laboratory receipt of samples for receipt of data:** Analyze within 2 weeks of collection. Final data packages should be submitted to Tetra Tech within 30 days after sample receipt.

**7. Analytical protocol required (reference appropriate SW-846 protocol):** No other methods should be used unless discussed in advance with Tetra Tech contact listed in Item B above. Data rejection and nonpayment will be recommended if a method other than the one specified in this request is used.

**8. Special technical and service instructions (if outside established SW-846 protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The case narrative should discuss any sample preparation or analytical irregularities. Retain unused sample and used sample containers at least 60 days. Retain sample extracts at least 365 days.

**9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to laboratory discretion.** Results should be presented in accordance with laboratory SOP.

The laboratory's data package should include the following items as they apply to the method: (1) case narrative, including a statement of samples received, a description of deviations from specified analytical method, explanations of data qualifiers applied to the data, description of all QC nonconformances experienced during sample analysis and any other significant problems encountered, and description of corrective actions taken; (2) table that cross-references field and laboratory sample numbers; (3) chain-of-custody forms pertaining to each sample delivery group or sample batch analyzed; (4) laboratory report for each sample showing project, field sample, and laboratory sample numbers; sample matrix description; dates of sample collection, receipt at laboratory, sample preparation, and analysis; analytical method description; individual parameter results with concentration units (including second column results or second detector results, or other confirmatory results, where appropriate); quantitation limits achieved; and dilution or concentration factors; (5) Data summary forms

Grain size, TOC, Total Solids/Sediment

that include QC sample such as surrogate results, blank results, MS/MSD results, initial and continuing calibration results, confirmatory results, laboratory control sample results, and other QC sample results; (6) raw data such as chromatograms, peak areas, retention times for gas chromatography (GC) and high performance liquid chromatography (HPLC) analyses, mass spectra for GC/MS analyses, and laboratory bench sheets; and (7) method detection limit and instrument detection limit results.

Two copies of the final data package shall be sent to Lisa Graczyk at the address in Item 10 below.

**10. Other (use additional sheets or attach supplementary information, as needed):**

All chain-of-custody forms, airbills, and original data shall be submitted to Lisa Graczyk within the time frame listed in Section 6 above. Photocopies of chain-of-custody forms and airbills may be submitted with a record of the location of the originals.

**Data Package Recipient Address:**

Lisa Graczyk  
Tetra Tech EM Inc.  
200 E. Randolph Dr., Suite 4700  
Chicago, IL 60601

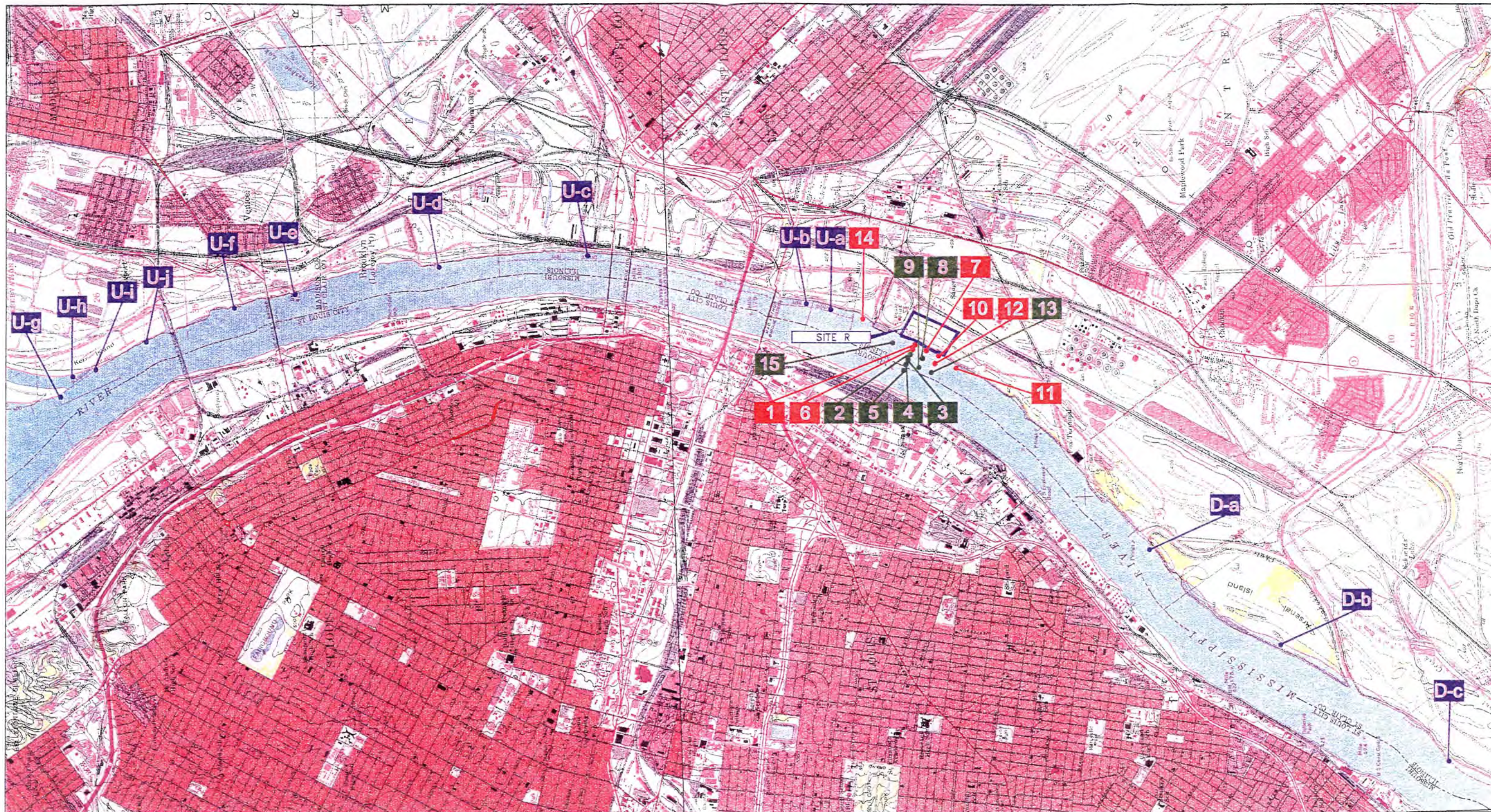
**11. Name of sampling/shipping contact:** Lisa Graczyk  
**Office Phone:** (312) 856-8721

**APPENDIX B**

**RECONNAISSANCE SURVEY SAMPLING LOCATION MAP**

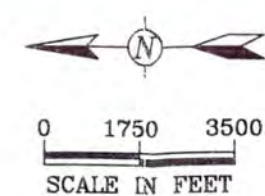
(1 Sheet)





NOTE: SEDIMENT SAMPLING LOCATIONS 10, 11, 14, U-g, U-h, U-i, and D-c CONTAINED SOME SILT; ALL OTHER SAMPLING LOCATIONS CONTAINED PREDOMINANTLY SAND BUT NO OBSERVABLE SILT.

- ON-SITE SEDIMENT SAMPLING LOCATION WITH TOTAL VOC CONCENTRATION GREATER THAN 2 PPB
- ON-SITE SEDIMENT SAMPLING LOCATION WITH NONDETECTABLE CONCENTRATION OF TOTAL VOCs
- POTENTIAL REFERENCE AREA SEDIMENT SAMPLING LOCATION



SOLUTIA INC., W.G. KRUMMRICH PLANT  
SAUGET, ILLINOIS

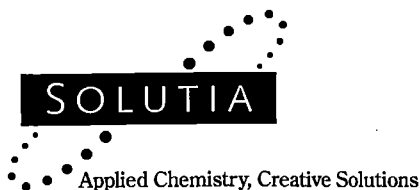
RECONNAISSANCE SURVEY  
SAMPLING LOCATION MAP

Tetra Tech EM Inc.

SOURCE: MODIFIED FROM USGS,  
CAHOKIA, ILLINOIS, QUADRANGLE,  
1993 AND GRANITE CITY, ILLINOIS,  
QUADRANGLE, 1993



**SOLUTIA - 045**



**Solutia Inc.**  
J. F. Queeny Plant  
201 Russell Blvd.  
St. Louis, Missouri 63104  
Tel/ 314-622-1400

November 14, 2000

Mr. Kenneth S. Bardo, DE-9J  
United States Environmental Protection Agency, Region V  
Corrective Action Section  
77 West Jackson Blvd.  
Chicago, IL 60604-3590

**Re: Solutia W.G. Krummrich Plant  
May 3, 2000 Administrative Order on Consent  
Update re Status of Access Agreements**

Dear Mr. Bardo:

As you know, Solutia Inc. ("Solutia") has been providing you with periodic updates on the status of our efforts in obtaining access to the off-site properties that will be involved in the sampling work required by the May 3, 2000 Administrative Order on Consent ("AOC") between Solutia and U.S. EPA. Solutia had originally determined that it would need access from twelve off-site landowners. To date, Solutia has received signed access agreements from two of these landowners, and is actively negotiating with a few other landowners. Some landowners have not responded at all to our initial request for access; others have inquired as to why the sampling is required on their particular property.

Because many of the proposed sampling locations are located on the boundary of Solutia's property, we are investigating the possibility of moving these sampling locations onto Solutia's property in order to eliminate the need for securing an access agreement.

Because sampling activities are scheduled to begin this coming Spring, Solutia plans to be more aggressive in the upcoming months to secure access to the properties we determine are necessary for the completion of the AOC sampling activities.

We will continue to keep you informed as to our access efforts. If you have any questions regarding the information contained in this letter, do not hesitate to call.

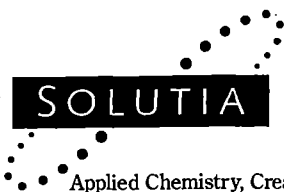
Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. Hiller".

Robert J. Hiller  
Project Manager  
Solutia - W.G. Krummrich Plant

cc: Colleen E. Michuda

**SOLUTIA - 046**



**Solutia Inc.**  
W.G. Krummrich Plant  
500 Monsanto Avenue  
Sauget, Illinois 62206-1198  
Tel 618-271-5835

November 20, 2000

Mr. Kenneth S. Bardo  
United States Environmental Protection Agency, Region V  
Corrective Action Section  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

RE: Solutia Inc., W.G. Krummrich Plant (ILD000802702)  
Administrative Order on Consent  
U.S. EPA Docket No.:R8H-5-00-003

Mr. Bardo,

Please find enclosed a revised copy of the Surface Water Sampling Plan. The revisions made to this sampling plan were based on comments that we received from the Agency during the October 12, 2000 meeting.

Solutia will implement this surface water sampling plan the week of October 23, 2000. Solutia understands that the Agency will be collecting sediment samples at this time and will share the results with Solutia when the data becomes available.

If you have any question or comments, please call me at (618) 482-6362.

Sincerely,

Robert J. Hiller  
Project Manager  
Solutia Inc. - W.G. Krummrich Plant

## 1.0 Introduction

The May 3, 2000 Administrative Order on Consent (AOC), USEPA Docket Number R8H-5-00-003, specifies that Solutia "must complete activities necessary to identify and define the nature and extent of releases of hazardous waste and/or hazardous constituents at or from the [W.G. Krummrich] Facility". Solutia submitted a Description of Current Conditions Report, which included a Site Sampling Plan, to USEPA on August 1, 2000. Surface Water, Groundwater and Soil Sampling Plans were included in the Site Sampling Plan. Current plans call for implementing the Surface Water Sampling Plan in 2000, the Groundwater Sampling Plan in 2001 and the Soil Sampling Plan in 2003.

Data collected during implementation of these plans will provide the information needed to prepare a Groundwater Environmental Indicators Report (EIR) and a Current Human Exposures Environmental Indicators Report. To comply with the AOC, the Groundwater EIR must be completed by January 1, 2002 and the Current Human Exposures EIR must be completed by January 1, 2004. Solutia must also propose, by June 1, 2004, final corrective measures necessary to protect human health and the environment for all current and future unacceptable risks due to releases of hazardous waste or hazardous constituents at or from the Facility.

This Surface Water Sampling Plan describes the surface water, sediment and fish sampling that will be conducted in the Mississippi River to determine the impact, if any, of groundwater discharge from the W.G. Krummrich facility. Sampling will be performed in October 2000, the optimum time for sampling fish. Surface water and sediment samples will be collected in the Mississippi River and analyzed to determine the concentration of VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin in these environmental media. In addition, benthic community structure will be evaluated to provide data for sediment triad evaluation. Bioassays will be conducted on surface water and sediment samples to determine the toxicity, if any, of these environmental media to sensitive organisms. Fish will be sampled in the area of plume discharge and upstream and downstream of this discharge to determine the impact, if any, of groundwater discharge on higher trophic level organisms. Information collected as part of the

Surface Water Sampling Plan will be used in the Ecological Risk Assessment and the Human Health Risk Assessment.

## 2.0 Plume Discharge Area Sampling Plan

Surface water samples will be collected in the Mississippi River along three transects running parallel to the bank. Transects will be located 50 feet, 150 feet and 300 feet from the bank and will run from the north end of the former River Terminal to the south end of Site R, a distance of approximately 2000 feet. Reconnaissance survey analytical data indicate that these sampling transects are located within the area of groundwater discharge. During this survey, which was conducted in September 2000, sediment samples were collected along three transects running from the bank toward center of the river. Analytical results are summarized below:

	<u>Distance from Bank, feet</u>								
<u>Total VOCs, ppb</u>	<u>50</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>	<u>600</u>	<u>700</u>	<u>1000</u>	<u>1400</u>
North Transect	644	NS	854	ND	NS	NS	ND	ND	ND
Center Transect	1300	ND	NS	NS	ND	NS	NS	NS	NS
South Transect	45	NS	473	NS	NS	1	NS	NS	NS

Three sampling stations will be located on each transect resulting in nine sampling stations within the plume discharge area. One sampling station will be located at the center point of each transect. Another sampling station will be located half way between the center station and the upstream end of each transect. A third sampling station will be located half way between the center station and the downstream end of each transect.

One surface water sample will be collected at each sampling station and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in surface water. Samples will be collected just above the sediment/surface water interface. Bioassays, using Cerodaphnia and Fat Head Minnows, will be performed on each surface water sample to determine surface water toxicity.

One sediment sample will be collected at each sampling station and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in sediments. Bioassays, using Hyallela and Fat Head Minnows, will be performed on each sediment sample to determine sediment toxicity.

Benthic community structure will be determined using three grab samples collected at both the north and south sampling stations on the sampling transect located 50 feet from the riverbank. Three grab samples will also be collected at the central sampling station on the sampling transect located 300 feet from the bank and used to evaluate benthic community structure. Since the dominant river bottom substrate is sand, benthic communities are expected to be limited.

Three composite samples of each target fish species will be collected to determine the impact of groundwater discharge to surface water on bottom feeder, forager and predator fish. A food source approach will be used to select fish for analysis:

<u>Food Source</u>	<u>Fish</u>	<u>Trophic Level</u>	<u>Endpoint Organism</u>
Omnivore	Channel Catfish	Bottom Feeder	Channel Catfish
Plankton	Shad (Large)	Forager	Osprey
	Shad (Small)		Heron
Omnivore	White Bass, Buffalo	Predator	Recreational Fisher

Fish tissue samples will be analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. Three to five fish will be collected for each composite. If not enough of the target species are present to provide the tissue mass required for chemical analysis, species that use the same food source will be included in the composite to achieve the required mass. Fish stomach contents will be examined and recorded to document food sources.

Number of Surface Water Samples: 9  
Number of Sediment Samples: 9

Analyses: VOCs Method 8260B  
SVOCs Method 8270C



Pesticides	Method 8081A
Herbicides	Method 8151A
PCBs	Method 680
Dioxin	Method 8290

Number of Benthic Community Structure Samples: 3

Number of Surface Water Bioassays

Cerodaphnia	9
Fat Head Minnow	9
	18

Number of Sediment Bioassays

Hyalloa	9
Fat Head Minnow	9
	18

Number of Fish Tissue Samples

Channel Catfish Composites (Whole Body)	3
Large Shad Composites (Whole Body)	3
Small Shad Composites (Whole Body)	3
White Bass/Buffalo (Fillets)	3
	12

Analyses:	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

### 3.0 Upstream Reference Area Sampling Plan

One surface water sample will be collected in the Mississippi River between the inactive Union Electric power plant and the Poplar Street Bridge. This sample will be analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in surface water upstream of the plume discharge area. It will be collected just above the sediment/surface water interface. Bioassays, using Cerodaphnia and Fat Head Minnows, will be performed on the sample to determine surface water toxicity.

One sediment sample will be collected at this sampling station and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in

sediments upstream of the plume discharge area. Bioassays, using Hyallela and Fat Head Minnows, will be performed on this sediment sample to determine sediment toxicity.

Benthic community structure will be determined by collecting and evaluating three grab samples at this sampling station. Since the dominant river bottom substrate is sand, benthic communities are expected to be limited.

One composite sample of each target fish species will be collected to determine the concentrations of VOCs, SVOCs, Pesticides, Herbicides and Dioxin in bottom feeder, forager and predator fish upstream of the site. Samples will be prepared by starting to collect fish approximately 1 mile upstream of the site and continuing to work upstream until a composite representative of the urbanized portion of the Mississippi River is obtained. Fish tissue samples will be analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. Three to five fish will be collected for each composite. If not enough of the target species are present to provide the tissue mass required for chemical analysis, species that use the same food source will be included in the composite to achieve the required mass. Fish stomach contents will be examined and recorded to document food sources.

Number of Surface Water Samples:	1
Number of Sediment Samples:	1

Analyses:	VOCs	Method 8260B
	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

Number of Benthic Community Structure Samples:	1
--	---

Number of Surface Water Bioassays	
Cerodaphnia	1
Fat Head Minnow	$\frac{1}{2}$
	2

Number of Sediment Bioassays	
Hyallela	1
Fat Head Minnow	$\frac{1}{2}$
	2

Number of Fish Tissue Samples

Channel Catfish Composites (Whole Body)	1
Large Shad Composites (Whole Body)	1
Small Shad Composites (Whole Body)	1
White Bass/Buffalo (Fillets)	$\frac{1}{4}$

Analyses:	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

#### 4.0 Downstream Reference Area Sampling Plan

One surface water sample will be collected in the Mississippi River at the northern end of the Cahokia Chute. This sample will be analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in surface water downstream of the site. It will be collected just above the sediment/surface water interface. Bioassays, using Cerodaphnia and Fat Head Minnows, will be performed on the sample to determine surface water toxicity.

One sediment sample will be collected at this sampling station and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin to determine the concentration of these constituents in sediments upstream of the plume discharge area. Bioassays, using Hyallela and Fat Head Minnows, will be performed on this sediment sample to determine sediment toxicity.

Benthic community structure will be determined by collecting and evaluating three grab samples at this sampling station. Since the dominant river bottom substrate is sand, benthic communities are expected to be limited.

One composite sample of each target fish species will be collected to determine the concentrations of VOCs, SVOCs, Pesticides, Herbicides and Dioxin in bottom feeder, forager and predator fish downstream of the site. Fish tissue samples will be analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. Three to five fish will be collected for each

composite. If not enough of the target species are present to provide the tissue mass required for chemical analysis, species that use the same food source will be included in the composite to achieve the required mass. Fish stomach contents will be examined and recorded to document food sources.

Number of Surface Water Samples:	1
Number of Sediment Samples:	1

Analyses:	VOCs	Method 8260B
	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

Number of Benthic Community Structure Samples:	1
--	---

Number of Surface Water Bioassays	
Cerodaphnia	1
Fat Head Minnow	$\frac{1}{2}$

Number of Sediment Bioassays	
Hyallolella	1
Fat Head Minnow	$\frac{1}{2}$

Number of Fish Tissue Samples	
Channel Catfish Composites (Whole Body)	1
Large Shad Composites (Whole Body)	1
Small Shad Composites (Whole Body)	1
White Bass/Buffalo (Fillets)	$\frac{1}{4}$

Analyses:	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

## **5.0 Soft Bottom Area Sampling Plan**

One local area of soft bottom sediment was observed during the September 2000 reconnaissance survey at a wing wall downstream of the site. One soft bottom sample will be

collected in this area and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. Bioassays, using Hyallela and Fat Head Minnows, will be performed on this sediment sample to determine sediment toxicity. Benthic community structure will be determined by collecting and evaluating three grab samples at this sampling station. One surface water sample will also be collected at this location and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. This water sample will be collected just above the sediment/surface water interface. Bioassays, using Cerodaphnia and Fat Head Minnows, will be performed on this surface water sample to determine surface water toxicity.

To provide a basis for comparison, one soft bottom sample will be collected upstream of the site in the vicinity of reconnaissance survey sample SED14 and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. Bioassays, using Hyallela and Fat Head Minnows, will be performed on this sediment sample to determine sediment toxicity. Benthic community structure will be determined by collecting and evaluating three grab samples at this sampling station. One surface water sample will also be collected at this location and analyzed for VOCs, SVOCs, Pesticides, Herbicides, PCBs and Dioxin. This water sample will be collected just above the sediment/surface water interface. Bioassays, using Cerodaphnia and Fat Head Minnows, will be performed on this surface water sample to determine surface water toxicity.

Number of Surface Water Samples:	2
Number of Sediment Samples:	2

Analyses:	VOCs	Method 8260B
	SVOCs	Method 8270C
	Pesticides	Method 8081A
	Herbicides	Method 8151A
	PCBs	Method 680
	Dioxin	Method 8290

Number of Benthic Community Structure Samples:	2
--	---

Number of Surface Water Bioassays	
Cerodaphnia	2
Fat Head Minnow	2
	<hr/> 4

Number of Sediment Bioassays	
Hyallela	2

Fat Head Minnow

$\frac{2}{4}$

## 6.0 Groundwater Level Measurement

Groundwater levels will be measured weekly prior to implementation of the Surface Water Sampling Plan and daily when the plan is being implemented. Groundwater levels will be compared to surface water levels recorded at the USACE or USGS gaging stations located at the Poplar Street and Eads Bridges, respectively. This comparison will ensure that groundwater is discharging to surface water during the implementation of the Surface Water Sampling Plan.

**SOLUTIA - 049**



**Solutia Inc.**  
W.G. Krummrich Plant  
500 Monsanto Avenue  
Sauget, Illinois 62206-1198  
Tel/ 618-271-5835

December 13, 2000

Mr. Kenneth Bardo  
U.S. EPA Region V  
Corrective Action Section  
Enforcement Compliance Branch  
DE-J9  
77 West Jackson Boulevard  
Chicago, IL 60604-3507

Re: Solutia Inc. - W.G.Krummrich Plant RCRA Corrective Action Quarterly  
*Report.*

Dear Mr. Bardo

Pursuant to Section VI 6b of the May 3, 2000 Administrative Order of Consent ("AOC") between Solutia Inc. ("Solutia") and the U.S. EPA, Solutia must file a progress report by the 15<sup>th</sup> day of each month following a quarter. This letter is being sent to you to satisfy that requirement.

#### **Work Performed To Date**

##### *Meetings*

Meetings between Solutia and USEPA personnel were held in Chicago in October 12 and November 15.

The purpose of the October 12 meetings was to review the objectives of the Surface Water Sampling Plan and to obtain Agency comments concerning the associated field work.

The surface water, sediment and the fish collection / study were discussed at the November 15 meeting.

##### *Surface Water Sampling Plan*

A reconnaissance survey and primary sampling program was conducted in September, October and November 2000 respectively, by Menzie-Cura & Associates, Inc. A brief summary of the reconnaissance survey and primary sampling program is provided in the Data Collected section of this letter.



### Access Agreements

Solutia is continuing to work toward obtaining access to the off-site properties that will be involved in the field work under the AOC. To date, Solutia has obtained access from three off-site property owners, and continues to negotiate with a few other landowners. Solutia is also preparing follow-up letters to be sent to landowners who have either not responded, or who have not yet agreed to sign.

Note that this access agreement update is intended to serve as Solutia's monthly progress report on access issues.

### Problems Encountered

To date there have been no issues.

### Data Collected

#### *Surface Water Sampling Plan*

##### **Study Area**

The study area includes the near-shore portion of the Mississippi River adjacent to the River Terminal and Site R, where Facility groundwater may be discharging to surface water. The study area included the "plume discharge area"(PDA) and locations upstream of discharge area (UDA) and downstream of discharge area (DDA).

##### **Reconnaissance Survey**

The Reconnaissance Survey was conducted the week of September 18, 2000 to evaluate physical conditions at the planned sampling locations and to refine the field sampling techniques that were to be used in the primary sampling program.

During the **Reconnaissance Survey** we:

- **Finalized sampling locations for the Main Sampling Event.**  
The locations were selected based on VOC analytical data that was obtained from samples that were collected along multiple transects extending to various distances from the Eastern shore.
- **Finalized the list of the selected representative receptor species.**
- **Conducted a fish habitat evaluation.**  
Evaluations were conducted for the planned sampling locations in the Mississippi River. The purpose of this evaluation was to determine if the sampling locations supported the types of fish that are planned for collection.
- **Selected two Reference Areas.**  
The Reference Areas included an Upstream (UDA) and Downstream (DDA) location.

- **Performed a habitat assessment for benthic invertebrates.**  
Visual observations of the bottom substrate, available cover, estimation of the flow or velocity and depth regime, channel morphology, and riparian and bank were observed and considered in selecting stations and Reference Areas
- **Determined the most appropriate sampling techniques .**  
Sampling techniques for both sediment and fish were developed based on survey observations.

### **Primary Sampling Program**

The Main Sampling Event was completed the week of October 23, 2000 and consisted of the following sampling and measurement activities:

- **Collection of sediment samples for chemical and physical analyses**  
Nine PDA locations and two upstream and two downstream locations for use in the ERA and as part of the sediment triad approach.
- **Collection of sediment samples for toxicity testing.**  
Bioassays were conducted at thirteen locations using two indicator species. A total of twenty eight sediment bioassay tests were performed.
- **Collection of benthic invertebrate samples**  
Samples were collected at seven locations x three replicates = twenty one samples for analysis of community structure.
- **Collection of surface water samples for chemical analyses.**  
Surface water samples were collected at nine site locations and four reference locations (at the bottom only) for a total of 13 surface water stations for chemical analysis for use in the ERA.
- **Collection of surface water samples for toxicity.**  
Surface water samples were collected at thirteen locations for chronic surface water toxicity (bioassay) tests using two indicator species. A total of 15 (13 stations and 2 field duplicates) surface water bioassay tests will be performed (2 species per assay).
- **Collection of fish samples for chemical analysis.**  
Fish from three trophic levels were collected at three locations within the PDA and from an upstream and a downstream location.: Data collected from this study will be used in the ERA and in the Human Health Risk Assessment. The weight, length, and width of each fish were recorded. The stomach contents of a representative subset were also observed. The general health and any visual anomalies were assessed by the commercial fishermen.
- **Documentation of field observations.**  
Field observations concerning the fish community and their habitat was documented for use in the ERA, as necessary.

- **Collection of appropriate QC samples**

QC samples included field duplicates, field equipment rinsate blanks, trip blanks, and additional sample volumes for matrix QC of matrix spike/matrix spike duplicates for sediment, water and bioassays.

**EPA Oversight Support**

A Menzie-Cura & Associates field crew returned to the Site on November 1, 2000 to support EPA in collection of their samples. This included operation of the sediment collection gear and navigation to the sample locations. This worked continued through November 3, 2000.

*Groundwater Elevation Data*

Groundwater elevation data was taken at selected shallow, intermediate, and deep wells that border the Mississippi River before and during the surface water sampling field activities.

**Problems Encountered**

To date there have been no issues.

**Project Schedule**

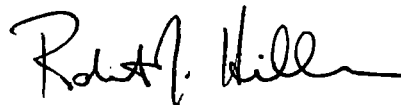
Reports from the surface water sampling field work will be completed in late December / early January. Following their receipt, the reports will be used to develop the next steps of the project.

**Percent Project Completed**

In total, the Krummrich AOC Project is 15% complete.

If you have any questions or comments regarding this quarterly report, please do not hesitate to call.

Sincerely,



Robert J. Hiller  
Project Manager  
Solutia Inc.-W.G. Krummrich Plant

cc: Alan Faust - Solutia  
Colleen Michuda - Solutia  
Bruce Yare - Solutia  
Jim Moore - IEPA  
Gina Search- IEPA

**SOLUTIA - 050**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

February 9, 2001

**CERTIFIED MAIL** 7000 0520 0020 5095 1538 **REPLY TO THE ATTENTION OF:**  
**RETURN RECEIPT REQUESTED** DE-9J

Mr. Robert Hiller  
Solutia Inc.  
W.G. Krummrich Plant  
500 Monsanto Avenue  
Sauget, IL 66206-1198

RE: Water Quality Criteria  
Solutia Inc.  
ILD 000 802 702

Dear Mr. Hiller:

The United States Environmental Protection Agency (U.S. EPA) recently received the validated data for sediment sampled from the Mississippi River on October 24, 2000 through November 3, 2000. Messrs. Alan Faust and Bruce Yare of Solutia Inc. were given a copy of the tabulated results and sample locations during a meeting held at the U.S. EPA, Region 5 office on January 26, 2000. A copy of the results and sample locations are enclosed (Enclosure 1).

**Sediment Data** - A chart of hazardous constituents found in Mississippi River sediment located upstream, midstream, and downstream of Solutia property (Site R) is provided in Enclosure 2. U.S. EPA data shows that sediment is contaminated with significant concentrations of VOCs and SVOCs starting at the northern edge of Site R. This area is also the approximate northern boundary of a groundwater contaminant plume from the Solutia, W.G. Krummrich facility that discharges to the Mississippi River. Significant concentrations of VOCs and SVOCs in sediment continue along and south of Site R, the approximate southern boundary of the groundwater contaminant plume. Significant concentrations of pesticides, a herbicide, and PCBs were also found near the middle and southern boundary of Site R, in the approximate center of the groundwater contaminant plume.

The areal extent of contaminated sediment in the Mississippi River is best defined by the presence of chlorobenzene at twelve sample locations, 4-chloroaniline at seven sample locations, and benzene at six sample locations. Aniline was also found in sediment at five locations, dichlorobenzenes and Aroclor (PCBs) at four locations, and  $\Delta$ -BHC at three locations. Other

hazardous constituents found in one or two sediment sample locations are toluene, 1,2-dichloroethane, xylenes, ethylbenzene, 2-chlorophenol, bis(2-ethylhexyl) phthalate, 2,4-dichlorophenol, 3-methylphenol, phenol, chlorobenzilate, 4,4'-DDD, methoxychlor, and 2,4-D. The greatest concentration of contaminants found in sediment occurs near and just south of the middle portion of Site R.

The table presented in Enclosure 3 provides the U.S. EPA, Region 5 Ecological Data Quality Levels (EDQLs) for each hazardous constituent found in Mississippi River sediment. An EDQL is a conservative screening concentration used to determine if the sediment may pose a risk to the environment. Eleven of the twenty-one sample locations (52%) have contaminant concentrations that exceed the Region 5 EDQL. The EDQL was exceeded for chlorobenzene at ten of the twelve sample locations where it was detected, at all sample locations for aniline, at four of seven sample locations for 4-chloroaniline, and at two of four sample locations for PCBs.

**Groundwater Data** - Solutia groundwater data correlates well with both the type and extent of contamination found in Mississippi River sediment. Groundwater data from May 2000 for wells monitoring the middle and deep sand aquifer near the northern extent of sediment contamination (wells GM-27B and GM-27C) found up to 1,400 ppb of benzene, 11,000 ppb of chlorobenzene, 700 ppb of toluene, 39,000 ppb of aniline, 8,100 ppb of phenol, 300 ppb of 4-chlorophenol, 20,000 ppb of 2-chloroaniline, 25,000 ppb of 3-chloroaniline, and 25,000 ppb of 4-chloroaniline. Chlorobenzene, aniline, and 4-chloroaniline were all found in concentrations in sediment exceeding Region 5 EDQLs, beginning in the area of wells GM-27B and GM-27C.

Historical groundwater data for the Solutia facility from December 1986 through November 1992 was reviewed by U.S. EPA. Again, correlations of groundwater contaminants with sediment data is apparent. Monitoring well locations are provided in Enclosure 4. Wells GM-27B and GM-27C show similar groundwater contamination as determined in May 2000. In nine sampling events, benzene concentration in groundwater ranged from 122 to 9,980 ppb, chlorobenzene concentrations ranged from 193 to 60,200 ppb, toluene concentrations ranged from <6 to 1,400 ppb, aniline concentrations ranged from 869 to 440,000 ppb, phenol concentrations ranged from <1.5 to 1,910 ppb, 2-chloroaniline concentrations ranged from 3,220 to 59,100 ppb, 3-chloroaniline concentrations ranged from <10 to 52,400 ppb, and 4-chloroaniline concentrations ranged from <10 to 53,100 ppb.

Data from wells GM-57C, GM-106, and GM-56C, located near the center of Site R and center of the Solutia, W.G. Krummrich facility plume, shows similar contaminants as found in Mississippi River sediment. In six to eight sampling events, benzene concentrations ranged from <4.4 to 613 ppb, chlorobenzene concentrations ranged from 64 to 7380 ppb, toluene concentrations ranged from 27.7 to 2,070 ppb, aniline concentrations ranged from 2,250 to 44,800 ppb, phenol concentrations ranged from <1.7 to 33,000 ppb, 2-chloroaniline concentrations ranged from <500 to 195,000 ppb, 3-chloroaniline concentrations ranged from <520 to 41,800 ppb, 4-chloroaniline concentrations ranged from 18,600 to 56,900 ppb, and 1,2-dichlorobenzene concentrations ranged from 2.7 to 1260 ppb.

Wells GM-28B, GM-28C, and GM-55C, located near the southern boundary of Site R and southern portion of the Solutia, W.G. Krummrich facility plume, also detected the same contaminants as found in Mississippi River sediment. In seven to ten sampling events, benzene concentrations ranged from 85.5 to 582 ppb, chlorobenzene concentrations ranged from 447 to 47,000 ppb, toluene concentrations ranged from <6 to 533 ppb, aniline concentrations ranged from <1,000 to 24,300 ppb, phenol concentrations ranged from <1.7 to 29,500 ppb, 2-chloroaniline concentrations ranged from 12,000 to 58,100 ppb, 3-chloroaniline concentrations ranged from 9,170 to 52,400 ppb, 4-chloroaniline concentrations ranged from 5,390 to 53,100 ppb, and 1,2-dichlorobenzene concentrations ranged from 6 to 9,810 ppb.

The five most frequently detected contaminants found by U.S. EPA in Mississippi River sediment are chlorobenzene, 4-chloroaniline, benzene, aniline, and 1,4-dichlorobenzene. A comparison of the maximum concentration detected in groundwater in the May 2000 sampling event and the maximum concentration detected in October 2000 sediment sampling is shown below.

Hazardous Constituent	Maximum Detection in Groundwater (ppb)	Maximum Detection in Sediment (ppb)
Chlorobenzene	11,000	10,000
4-chloroaniline	25,000	6,400
Benzene	1,400	58
Aniline	39,000	3,900
1,4-dichlorobenzene	<2,000	1,700

The maximum concentration of hazardous constituents frequently detected in Mississippi River sediment were found at 4% to 91% of the maximum concentration found in groundwater discharging to the Mississippi River. Benzene concentrations in sediment were the lowest compared to the groundwater concentration and chlorobenzene concentrations were the highest. High chlorobenzene concentrations in groundwater continue to be found in the manufacturing portion of the Solutia, W.G. Krummrich facility. Sampling conducted in 1998 found up to 260,000 ppb of chlorobenzene in the shallow groundwater, up to 9,000 ppb in the intermediate aquifer, and up to 1,400 ppb in the deep aquifer.

Chlorobenzene releases from plant operations to groundwater continue to be an ongoing concern as evidenced by a recent October 2 and 3, 2000 release of 1,156 pounds of chlorobenzene to the ground at the Monochlorobenzene Manufacturing Department (see ESDA Incident No. H2000-1879). More recently, 6,700 gallons (58,000 pounds) of chlorobenzene was lost to the subsurface at the Monochlorobenzene Manufacturing Department on January 7 and 8, 2001. A dual-phase extraction system will be installed in an attempt to recover the spilled chlorobenzene.

**Water Quality Criteria** - Illinois EPA publishes a listing of derived water quality criteria in the Illinois Register pursuant to Section 302.669 of 35 Ill. Adm. Code. The Illinois EPA acute, chronic, and human health criterion for site-related hazardous constituents found in groundwater and sediment at the Solutia facility are presented in Enclosure 5.

Contaminated groundwater from Solutia property that discharges to the Mississippi River along at least a 2000-foot length of the east bank exceeds the criteria for those hazardous constituents presented in Enclosure 5. Historical groundwater data from monitoring wells GM-27B, GM-27C, GM-57C, GM-106, GM-56C, GM-28B, GM-28C, and GM-55C located along the east bank shows that concentrations of site-related contaminants typically exceed acute criterion for chlorobenzene, 1,2-dichlorobenzene, aniline, phenol, 2-chloroaniline, and 4-chloroaniline, and chronic criterion for benzene and toluene.

U.S. EPA sediment data from the Mississippi River further documents exceedances of Illinois EPA derived water quality criteria. The sediments are primarily fine to coarse sand with low total organic carbon (TOC). A small area of finer silts with higher TOC occurs at sample locations PDA-2, PDA-3, PDA-4, and SD-5-150. Analyzing sandy sediments with low TOC is likely representative of the pore water within the sand matrix since very little adsorption of organic contaminants would be expected



on the solids. The sediment pore water is likely to be transient groundwater from the sand aquifer discharging to surface water of the Mississippi River.

A comparison of U.S. EPA sediment data found in Enclosure 1 with Illinois EPA derived water quality criteria (see Enclosure 5) shows that nearly all sediment sample locations with detectable concentrations of chlorobenzene, aniline, and 4-chloroaniline exceed the water quality criteria (see Enclosure 6).

**Action** - Solutia must consider the exceedances of Illinois EPA derived water quality criteria at or from its facility as required by the Administrative Order on Consent, Docket No. R8H-5-00-003. If you have any questions regarding this matter, please contact Kenneth Bardo at (312) 886-7566.

Sincerely yours,

*George Wampler*  
George Wampler, Chief

Corrective Action Section

Enforcement and Compliance Assurance Branch

**SENDER: COMPLETE THIS SECTION**

1. Article Addressed to:  
Mr. Robert Miller  
Solutia Inc  
U.S. Krommich Plant  
500 Monsanto Ave.  
Sagest, IL 66206-1198

2. Article Number (Copy from service label)  
70000119151201100020150951 15138 111111

PS Form 3811, July 1999

Domestic Return Receipt

102565-99-M-1789

**COMPLETE THIS SECTION ON DELIVERY**

A. Received by (Please Print Clearly)  
C. Signature  
D. Is delivery address different from item 1? If YES, enter delivery address below:

B. Date of Delivery  
3-9

3. Service Type  
☒ Certified Mail  
☐ Registered  
☐ Insured Mail  
☐ Express Mail  
☐ Return Receipt for Merchandise  
☐ C.O.D.

4. Restricted Delivery? (Extra Fee)  
☐ Yes  
☐ No

U.S. Postal Service  
**CERTIFIED MAIL RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

POST 5605 0200 0250 0002

K. Bardo, DEPT

Postage \$ 1.18  
Certified Fee 1.90  
Return Receipt Fee (Endorsement Required) 1.50  
Restricted Delivery Fee (Endorsement Required)  
Total Postage & Fees \$ 4.58

CHICAGO IL LOOP STA  
2001  
Postmark Here

Recipient's Name (Please Print Clearly) (To be completed by mailer)  
Bob Miller  
Street, Apt. No.; or PO Box No.  
500 Monsanto Ave.  
City, State, ZIP+4  
Sagest, IL 66206

PS Form 3800, February 2000 See Reverse for Instructions

bcc: Richard Murawski, ORC  
Thomas Martin, ORC  
Michael McAteer, RRB1  
Bruce Sypniewski, ECAB Chief  
Kevin Pierard, WNPSPB

DE-9J:KBARDO:6-7566:kb:2/8/01

Solutia Water Quality Criteria

Enclosure 1

TABLE 1

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA INC. SPLIT SAMPLES

Sample Identification	PDA-2-60	PDA-5-R-60	PDA-8-60
Date Collected	October 25, 2000	October 24, 2000	October 26, 2000
<b>Volatile Organic Compounds (micrograms per kilogram [µg/kg])</b>			
Acetone	5,800 U	3,300U	1,400 U
Benzene	1,100 U	260 U	3.40 U
Chlorobenzene	10,000	450	700
1,2-Dichloroethane	1,100 U	110 J	41 J
Methylene chloride	1,100 U	260 U	340 U
Toluene	12,000	140 J	340 U
Xylenes (total)	1,100 U	120 J	340 U
<b>Semivolatile Organic Compounds (µg/kg)</b>			
Aniline	210 J	3,900 J	410 U
4-Chloroaniline	720	3,300	410 U
2-Chlorophenol	580 U	400 J	410 U
1,2-Dichlorobenzene	120 J	780 U	410 U
1,4-Dichlorobenzene	390 J	780 U	410 U
2,4-Dichlorophenol	580 U	610 J	410 U
3-Methylphenol	95 J	780 U	410 U
Phenol	580 U	3,200 J	410 U
2,4,6-Trichlorophenol	580 U	780 U	410 U
2,6-Dichlorophenol	580 U	780 U	410 U
<b>Organochlorine Pesticides (µg/kg)</b>			
Aldrin	6.0 U	4.0 U	2.1 U
alpha-BHC	6.0 U	4.0 U	2.1 U
beta-BHC	6.0 U	4.0 U	2.1 U
delta-BHC	6.0 U	44 J	5.1 J
gamma-BHC (lindane)	6.0 U	4.0 U	2.1 U
Chlordane (technical)	60 U	40 U	21 U
Chlorobenzilate	120 U	21 J	41 U
4,4-DDD	6.0 U	14	2.1 U
4,4-DDE	6.0 U	4.0 U	2.1 U
4,4-DDT	6.0 U	4.0 U	2.1 U
Diallate	120 U	78 U	41 U
Dieldrin	6.0 U	4.0 U	2.1 U

TABLE 1 (continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA INC. SPLIT SAMPLES

Sample Identification	PDA-2-60	PDA-5-R-60	PDA-8-60
Date Collected	October 25, 2000	October 24, 2000	October 26, 2000
<b>Organochlorine Pesticides (µg/kg) (Continued)</b>			
Endosulfan I	6.0 U	4.0 U	2.1 U
Endosulfan II	6.0 U	4.0 U	2.1 U
Endosulfan sulfate	6.0 U	4.0 U	2.1 U
Endrin	6.0 U	4.0 U	2.1 U
Endrin aldehyde	6.0 U	4.0 U	2.1 U
Heptachlor	6.0 U	4.0 U	2.1 U
Heptachlor epoxide	6.0 U	4.0 U	2.1 U
Isodrin	12 U	7.8 U	4.1 U
Kepone	120 U	78 U	41 U
Methoxychlor	12 U	7.8 U	4.1 U
Toxaphene	230 U	160 U	83 U
<b>Polychlorinated Biphenyls (PCB) (µg/kg)</b>			
Aroclor 1016	58 U	39 U	41 U
Aroclor 1221	58 U	39 U	41 U
Aroclor 1232	58 U	39 U	41 U
Aroclor 1242	58 U	39 U	41 U
Aroclor 1248	58 U	84 J	41 U
Aroclor 1254	58 U	39 U	41 U
Aroclor 1260	58 U	39 U	41 U
<b>Herbicides (µg/kg)</b>			
2,4-D	140 U	790	99 U
2,4,5-TP (Silvex)	35 U	24 U	25 U
2,4,5-T	35 U	24 U	25 U
<b>Organophosphorus Pesticides (µg/kg)</b>			
Dimethoate	1,200 U	39 U	41 U
Disulfoton	1,200 U	39 U	41 U
Famphur	1,200 U	39 U	41 U
Methyl parathion	1,200 U	39 U	41 U
Phorate	1,200 U	39 U	41 U
Tetraethyldithiopyrophosphate	1,200 U	39 U	41 U
Thionazin	1,200 U	39 U	41 U
o,o,o-Triethylphosphorothioate	1,200 U	39 U	41 U
<b>General Chemistry (milligram per kilogram)</b>			
Total organic carbon	11,000	390	510

**TABLE 1 (continued)**

**VALIDATED ANALYTICAL RESULTS FOR SOLUTIA INC. SPLIT SAMPLES**

**Notes:**

- |    |   |  |
|----|---|--|
| J  | = | The result was estimated for quality control reasons.  |
| U  | = | The analyte was not detected; the numerical value is the sample reporting limit.                   |
| UJ | = | The analyte was not detected; the sample reporting limit is estimated for quality control reasons. |

TABLE 2

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-1-50	MR-SD-1-150	MR-SD-1-300	MR-SD-2-50	MR-SD-2-150
Date Collected	November 1, 2000				
Volatile Organic Compounds (micrograms per kilogram [µg/kg])					
Acetone	22 U	22 U	26 U	24 U	1,300 U
Benzene	5.5 U	5.4 U	6.4 U	5.9 U	55 J
Chlorobenzene	5.5 U	5.4 U	6.4 U	6.5	390
Chloroform	5.5 U	5.4 U	6.4 U	5.9 U	300 U
Ethylbenzene	5.5 U	5.4 U	6.4 U	5.9 U	300 U
Methylene chloride	5.5 U	5.4 U	6.4 U	5.9 U	300 U
Xylenes (total)	5.5 U	5.4 U	6.4 U	5.9 U	300 U
Semivolatile Organic Compounds (µg/kg)					
Aniline	400 U	390 U	390 U	400 U	400 U
bis(2-Ethylhexyl)phthalate	400 U	390 U	390 U	400 U	400 U
4-Chloroaniline	400 U	390 U	390 U	400 U	99 J
1,2-Dichlorobenzene	400 U	390 U	390 U	400 U	400 U
1,3-Dichlorobenzene	400 U	390 U	390 U	400 U	400 U
1,4-Dichlorobenzene	400 U	390 U	390 U	400 U	400 U
Organochlorine Pesticides (µg/kg)					
Aldrin	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
alpha-BHC	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
beta-BHC	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
delta-BHC	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
gamma-BHC (lindane)	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Chlordane (technical)	20 U	20 U	20 U	21 U	20 U
Chlorobenzilate	40 U	39 U	39 U	40 U	40 U
4,4-DDD	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
4,4-DDE	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
4,4-DDT	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Diallate	40 U	39 U	39 U	40 U	40 U
Dieldrin	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Endosulfan I	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Endosulfan II	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-1-50	MR-SD-1-150	MR-SD-1-300	MR-SD-2-50	MR-SD-2-150
Date Collected	November 1, 2000				
Endosulfan sulfate	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
<b>Organochlorine Pesticides (<math>\mu\text{g/kg}</math>) (Continued)</b>					
Endrin	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Endrin aldehyde	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Heptachlor	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Heptachlor epoxide	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U
Isodrin	4.0 U	3.9 U	3.9 U	4.0 U	4.0 U
Kepone	40 U	39 U	39 U	40 U	40 U
Methoxychlor	4.0 U	3.9 U	3.9 U	4.0 U	4.0 U
Toxaphene	80 U	80 U	79 U	81 U	81 U
<b>Polychlorinated Biphenyls (PCB) (<math>\mu\text{g/kg}</math>)</b>					
Aroclor 1016	40 U	39 U	39 U	40 U	40 U
Aroclor 1221	40 U	39 U	39 U	40 U	40 U
Aroclor 1232	40 U	39 U	39 U	40 U	40 U
Aroclor 1242	40 U	39 U	39 U	40 U	40 U
Aroclor 1248	40 U	39 U	39 U	40 U	40 U
Aroclor 1254	40 U	39 U	39 U	40 U	40 U
Aroclor 1260	40 U	39 U	39 U	40 U	40 U
<b>Herbicides (<math>\mu\text{g/kg}</math>)</b>					
2,4-D	96 U	95 U	94 U	97 U	96 U
2,4,5-TP (Silvex)	24 U	24 U	24 U	24 U	24 U
2,4,5-T	24 U	24 U	24 U	24 U	24 U
<b>Organophosphorus Pesticides (<math>\mu\text{g/kg}</math>)</b>					
Dimethoate	40 U	39 U	39 U	40 U	40 U
Disulfoton	40 U	39 U	39 U	40 U	40 U
Famphur	40 U	39 U	39 U	40 U	40 U
Methyl parathion	40 U	39 U	39 U	40 U	40 U
Phorate	40 U	39 U	39 U	40 U	40 U
Tetraethyldithiopyrophosphate	40 U	39 U	39 U	40 U	40 U



TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-1- 50	MR-SD-1- 150	MR-SD-1- 300	MR-SD-2- 50	MR-SD-2- 150
Date Collected	November 1, 2000				
Thionazin	40 U	39 U	39 U	40 U	40 U
o,o,o- Triethylphosphorothioate	40 U	39 U	39 U	40 U	40 U
<b>General Chemistry (milligram per kilogram)</b>					
Total organic carbon	120 U	120 U	120 U	120 U	120 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-2-330	MR-SD-3-25 <sup>a</sup>	MR-SD-3-99	MR-SD-4-90	MR-SD-POP-90
Date Collected	November 1, 2000	November 2, 2000			
Volatile Organic Compounds (micrograms per kilogram [µg/kg])					
Acetone	21 U	30 U	160 U	26 U	28 U
Benzene	5.3 U	7.5 U	16 U	4.2 J	7.1 U
Chlorobenzene	5.3 U	7.5 U	3.3 J	100 J	7.1 U
Chloroform	5.3 U	7.5 U	16 U	6.5 U	7.1 U
Ethylbenzene	5.3 U	7.5 U	16 U	2.0 J	7.1 U
Methylene chloride	5.3 U	7.5 U	16 U	6.5 U	7.1 U
Xylenes (total)	5.3 U	7.5 U	16 U	2.6 J	7.1 U
Semivolatile Organic Compounds (µg/kg)					
Aniline	380 U	440	220 J	400 U	410 U
bis(2-Ethylhexyl)phthalate	380 U	390 U	390 U	400 U	410 U
4-Chloroaniline	380 U	390 U	130 J	400 U	410 U
1,2-Dichlorobenzene	380 U	390 U	390 U	400 U	410 U
1,3-Dichlorobenzene	380 U	390 U	390 U	400 U	410 U
1,4-Dichlorobenzene	380 U	390 U	390 U	400 U	410 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-2-330	MR-SD-3-25 <sup>a</sup>	MR-SD-3-99	MR-SD-4-90	MR-SD-POP-90
Date Collected	November 1, 2000	November 2, 2000			
<b>Organochlorine Pesticides (µg/kg)</b>					
Aldrin	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
alpha-BHC	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
beta-BHC	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
delta-BHC	2.0 U	2.0 U	2.0 U	3.7 J	2.1 U
gamma-BHC (lindane)	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Chlordane (technical)	20 U	20 U	20 U	41 U	21 U
Chlorobenzilate	38 U	39 U	39 U	79 U	41 U
4,4-DDD	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
4,4-DDE	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
4,4-DDT	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Diallate	38 U	39 U	39 U	79 U	41 U
Dieldrin	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Endosulfan I	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Endosulfan II	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Endosulfan sulfate	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-2-330	MR-SD-3-25 <sup>a</sup>	MR-SD-3-99	MR-SD-4-90	MR-SD-POP-90
Date Collected	November 1, 2000	November 2, 2000			
<b>Organochlorine Pesticides (µg/kg) (Continued)</b>					
Endrin	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Endrin aldehyde	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Heptachlor	2.0 U	2.0 U	2.0 U	4.1 UJ	2.1 U
Heptachlor epoxide	2.0 U	2.0 U	2.0 U	4.1 U	2.1 U
Isodrin	3.8 U	3.9 U	3.9 U	7.9 U	4.1 U
Kepone	38 U	39 U	39 U	79 U	41 U
Methoxychlor	3.8 U	3.9 U	3.9 U	3.4 J	4.1 U
Toxaphene	78 U	80 U	80 U	160 U	84 U
<b>Polychlorinated Biphenyls (PCB) (µg/kg)</b>					
Aroclor 1016	38 U	39 U	39 U	40 U	41 U
Aroclor 1221	38 U	39 U	39 U	40 U	41 U
Aroclor 1232	38 U	39 U	39 U	40 U	41 U
Aroclor 1242	38 U	39 U	39 U	40 U	41 U
Aroclor 1248	38 U	39 U	39 U	40 U	41 U
Aroclor 1254	38 U	39 U	39 U	40 U	41 U
Aroclor 1260	38 U	39 U	39 U	40 U	41 U
<b>Herbicides (µg/kg)</b>					
2,4-D	93 U	96 U	95 U	96 U	100 U
2,4,5-TP (Silvex)	23 U	24 U	24 U	24 U	25 U
2,4,5-T	23 U	24 U	24 U	24 U	25 U
<b>Organophosphorus Pesticides (µg/kg)</b>					
Dimethoate	38 U	39 UJ	39 UJ	40 UJ	41 UJ
Disulfoton	38 U	39 UJ	39 UJ	40 UJ	41 UJ
Famphur	38 U	39 U	39 U	40 UJ	41 U
Methyl parathion	38 U	39 UJ	39 UJ	40 UJ	41 UJ
Phorate	38 U	39 UJ	39 UJ	40 UJ	41 UJ
Tetraethyldithiopyrophosphate	38 U	39 U	39 U	40 UJ	41 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-2-330	MR-SD-3-25 <sup>a</sup>	MR-SD-3-99	MR-SD-4-90	MR-SD-POP-90
Date Collected	November 1, 2000	November 2, 2000			
Thionazin	38 U	39 U	39 U	40 UJ	41 U
o,o,o-Triethylphosphorothioate	38 U	39 U	39 U	40 UJ	41 U
General Chemistry (milligram per kilogram)					
Total organic carbon	120 U	120 U	120 U	120 U	130 U

Sample Identification	MR-SD-5-75	MR-SD-5-150	MR-SD-5-315	MR-SD-6-25 <sup>b</sup>	MR-SD-6-90
Date Collected	November 3, 2000				
Volatile Organic Compounds (micrograms per kilogram [µg/kg])					
Acetone	1,300 U	2,500 U	1,300 U	24 U	35 U
Benzene	45 J	58 J	260 U	9.0	0.72 J
Chlorobenzene	1,800	6,700	3,100	82	8.0
Chloroform	370 U	320 U	260 U	6.0 U	5.6 U
Ethylbenzene	370 U	320 U	260 U	6.0 U	5.6 U
Methylene chloride	370 U	320 U	260 U	6.1 U	5.6 U
Xylenes (total)	370 U	320 U	260 U	6.0 U	5.6 U
Semivolatile Organic Compounds (µg/kg)					
Aniline	2,400	3,400	380 U	400 U	400 U
bis(2-Ethylhexyl)phthalate	430 U	430 U	380 U	93 J	400 U
4-Chloroaniline	3,000 J	6,400 J	380 U	400 U	400 U
1,2-Dichlorobenzene	430 U	430 U	380 U	190 J	55 J
1,3-Dichlorobenzene	430 U	430 U	380 U	150 J	400 U
1,4-Dichlorobenzene	300 J	1,700	380 U	330 J	51 J

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-5-75	MR-SD-5-150	MR-SD-5-315	MR-SD-6-25 <sup>b</sup>	MR-SD-6-90
Date Collected	November 3, 2000				
Organochlorine Pesticides (µg/kg)					
Aldrin	2.2 U	11 U	1.9 U	2.0 U	2.0 U
alpha-BHC	2.2 U	11 U	1.9 U	2.0 U	2.0 U
beta-BHC	2.2 U	11 U	1.9 U	2.0 U	2.0 U
delta-BHC	2.2 U	11 U	1.9 U	2.0 U	2.0 U
gamma-BHC (lindane)	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Chlordane (technical)	22 U	110 U	19 U	20 U	20 U
Chlorobenzilate	43 U	220 U	38 U	40 U	40 U
4,4-DDD	2.2 U	11 U	1.9 U	2.0 U	2.0 U
4,4-DDE	2.2 U	11 U	1.9 U	2.0 U	2.0 U
4,4-DDT	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Diallate	43 U	220 U	38 U	40 U	40 U
Dieldrin	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Endosulfan I	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Endosulfan II	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Endosulfan sulfate	2.2 U	11 U	1.9 U	2.0 U	2.0 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-5-75	MR-SD-5-150	MR-SD-5-315	MR-SD-6-25 <sup>b</sup>	MR-SD-6-90
Date Collected	November 3, 2000				
<b>Organochlorine Pesticides (µg/kg) (Continued)</b>					
Endrin	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Endrin aldehyde	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Heptachlor	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Heptachlor epoxide	2.2 U	11 U	1.9 U	2.0 U	2.0 U
Isodrin	4.3 U	22 U	3.8 U	4.0 U	4.0 U
Kepone	43 U	220 U	38 U	40 U	40 U
Methoxychlor	4.3 U	22 U	3.8 U	4.0 U	4.0 U
Toxaphene	88 U	440 U	77 U	81 U	80 U
<b>Polychlorinated Biphenyls (PCB) (µg/kg)</b>					
Aroclor 1016	43 U	120 J	38 U	40 U	40 U
Aroclor 1221	43 U	43 U	38 U	40 U	40 U
Aroclor 1232	43 U	43 U	38 U	40 U	40 U
Aroclor 1242	43 U	43 U	38 U	40 U	40 U
Aroclor 1248	43 U	43 U	38 U	40 U	31 J
Aroclor 1254	43 U	43 U	38 U	40 U	40 U
Aroclor 1260	43 U	43 U	38 U	40 U	40 U
<b>Organochlorine Herbicides (µg/kg)</b>					
2,4-D	100 U	100 U	92 U	96 U	96 U
2,4,5-TP (Silvex)	26 U	26 U	23 U	24 U	24 U
2,4,5-T	26 U	26 U	23 U	24 U	24 U
<b>Organophosphorus Pesticides (µg/kg)</b>					
Dimethoate	43 U	43 U	38 U	40 U	40 U
Disulfoton	43 U	43 U	38 U	40 U	40 U
Famphur	43 U	43 U	38 U	40 U	40 U
Methyl parathion	43 U	43 U	38 U	40 U	40 U
Phorate	43 U	43 U	38 U	40 U	40 U
Tetraethyldithiopyrophosphate	43 U	43 U	38 U	40 U	40 U
Thionazin	43 U	43 U	38 U	40 U	40 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-5-75	MR-SD-5-150	MR-SD-5-315	MR-SD-6-25 <sup>b</sup>	MR-SD-6-90
Date Collected	November 3, 2000				
o,o,o-Triethylphosphorothioate	43 U	43 U	38 U	40 U	40 U
<b>General Chemistry (milligram per kilogram)</b>					
Total organic carbon	200	7,400	110 U	870	1,100



TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-7-45	MR-SD-7-150	MR-SD-7-280	MR-SD-8-57	MR-SD-9-51
Date Collected	November 3, 2000			October 27, 2000	
Volatile Organic Compounds (micrograms per kilogram [µg/kg])					
Acetone	35 U	1,600 U	22 U	75 U	120 U
Benzene	5.7 U	36 J	5.5 U	6.0 U	6.8 U
Chlorobenzene	2.2 U	1,600	5.5 U	6.0 U	1.6 J
Chloroform	5.7 U	270 U	5.5 U	6.0 U	6.8 U
Ethylbenzene	5.7 U	270 U	5.5 U	6.0 U	6.8 U
Methylene chloride	5.7 U	270 U	5.5 U	6.0 U	6.8 U
Xylenes (total)	5.7 U	270 U	5.5 U	6.0 U	6.8 U
Semivolatile Organic Compounds (µg/kg)					
Aniline	400 U	390 U	390 U	390 U	420 U
bis(2-Ethylhexyl)phthalate	400 U	390 U	390 U	390 U	420 U
4-Chloroaniline	400 U	58 J	390 U	390 U	420 U
1,2-Dichlorobenzene	400 U	390 U	390 U	390 U	420 U
1,3-Dichlorobenzene	400 U	390 U	390 U	390 U	420 U
1,4-Dichlorobenzene	400 U	390 U	390 U	390 U	420 U
Organochlorine Pesticides (µg/kg)					
Aldrin	2.1 U	2.0 U	2.0 U	2.0 U	11 U
alpha-BHC	2.1 U	2.0 U	2.0 U	2.0 U	11 U
beta-BHC	2.1 U	2.0 U	2.0 U	2.0 U	11 U
delta-BHC	2.1 U	2.0 U	2.0 U	2.0 U	11 U
gamma-BHC (lindane)	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Chlordane (technical)	21 U	20 U	20 U	20 U	110 U
Chlorobenzilate	40 U	39 U	39 U	39 U	210 U
4,4-DDD	2.1 U	2.0 U	2.0 U	2.0 U	11 U
4,4-DDE	2.1 U	2.0 U	2.0 U	2.0 U	11 U
4,4-DDT	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Diallate	40 U	39 U	39 U	39 U	210 U
Dieldrin	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Endosulfan I	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Endosulfan II	2.1 U	2.0 U	2.0 U	2.0 U	11 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-7-45	MR-SD-7-150	MR-SD-7-280	MR-SD-8-57	MR-SD-9-51
Date Collected	November 3, 2000			October 27, 2000	
Endosulfan sulfate	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Endrin	2.1 U	2.0 U	2.0 U	2.0 U	11 U
<b>Organochlorine Pesticides (µg/kg) (Continued)</b>					
Endrin aldehyde	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Heptachlor	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Heptachlor epoxide	2.1 U	2.0 U	2.0 U	2.0 U	11 U
Isodrin	4.0 U	3.9 U	3.9 U	3.9 U	21 U
Kepone	40 U	39 U	39 U	39 U	210 U
Methoxychlor	4.0 U	3.9 U	3.9 U	3.9 U	21 U
Toxaphene	81 U	79 U	80 U	79 U	420 U
<b>Polychlorinated Biphenyls (PCB) (µg/kg)</b>					
Aroclor 1016	40 U	39 U	39 U	39 U	42 U
Aroclor 1221	40 U	39 U	39 U	39 U	42 U
Aroclor 1232	40 U	39 U	39 U	39 U	42 U
Aroclor 1242	40 U	39 U	39 U	39 U	42 U
Aroclor 1248	40 U	20 J	39 U	39 U	42 U
Aroclor 1254	40 U	39 U	39 U	39 U	42 U
Aroclor 1260	40 U	39 U	39 U	39 U	42 U
<b>Organochlorine Herbicides (µg/kg)</b>					
2,4-D	97 U	94 U	95 U	94 U	100 U
2,4,5-TP (Silvex)	24 U	24 U	24 U	24 U	25 U
2,4,5-T	24 U	24 U	24 U	24 U	25 U
<b>Organophosphorus Pesticides (µg/kg)</b>					
Dimethoate	40 U	39 U	39 U	39 U	42 U
Disulfoton	40 U	39 U	39 U	39 U	42 U
Famphur	40 U	39 U	39 U	39 U	42 U
Methyl parathion	40 U	39 U	39 U	39 U	42 U
Phorate	40 U	39 U	39 U	39 U	42 U
Tetraethyldithiopyrophosphate	40 U	39 U	39 U	39 U	42 U

TABLE 2 (Continued)

## VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES

Sample Identification	MR-SD-7-45	MR-SD-7-150	MR-SD-7-280	MR-SD-8-57	MR-SD-9-51
Date Collected	November 3, 2000			October 27, 2000	
Thionazin	40 U	39 U	39 U	39 U	42 U
o,o,o-Triethylphosphorothioate	40 U	39 U	39 U	39 U	42 U
<b>General Chemistry (milligram per kilogram)</b>					
Total organic carbon	780	120 U	120 U	120 U	3,700

**TABLE 2 (Continued)**

**VALIDATED ANALYTICAL RESULTS FOR SOLUTIA, INC. SEDIMENT SAMPLES**

Notes:

J = The result was estimated for quality control reasons.  
U = The analyte was not detected; the numerical value is the sample reporting limit.  
UJ = The analyte was not detected; the sample reporting limit is estimated for quality control reasons.

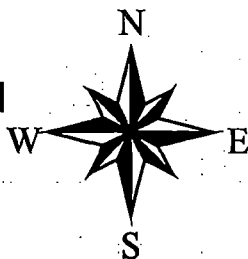
<sup>a</sup> Field duplicate of sample MR-SD-3-99.

<sup>b</sup> Field duplicate of sample MR-SD-6-90.



1000 0 1000 2000 Feet

● TETRA TECH  
 SAMPLING LOCATION  
 ● MENZIE-CURA  
 SAMPLING LOCATION



SOLUTIA FACILITY, SAUGET, ILLINOIS  
 SAMPLING LOCATIONS  
 ADJACENT TO SITE R



TETRA TECH EM INC.

Enclosure 2

# Significant Detections of Organic Hazardous Constituents in Mississippi River

(Shaded Box Indicates Significant Detection of Hazardous Constituent)

## Sediment Sample Location Number and Relationship to Site R

(Last Number in Sample Location is Distance in Feet from Site R)

Hazardous Constituent Detected	Upstream	Just North of Site R			North Edge of Site R					Middle of Site R		
	SD-POP-90	SD-1-50	SD-1-150	SD-1-300	SD-2-50	SD-2-150	SD-2-330	PD-8-60	SD-3-99	PDA-5-60	SD-4-90	SD-5-75
<b>VOCs</b>												
Chlorobenzene												
Benzene												
Xylenes												
Ethylbenzene												
Toluene												
1,2-DCA												
<b>SVOCs</b>												
4-Chloroaniline												
Aniline												
1,2-DCB												
1,3-DCB												
1,4-DCB												
Bis(2-ethyl hexyl)phthalate												
2-Chlorophenol												

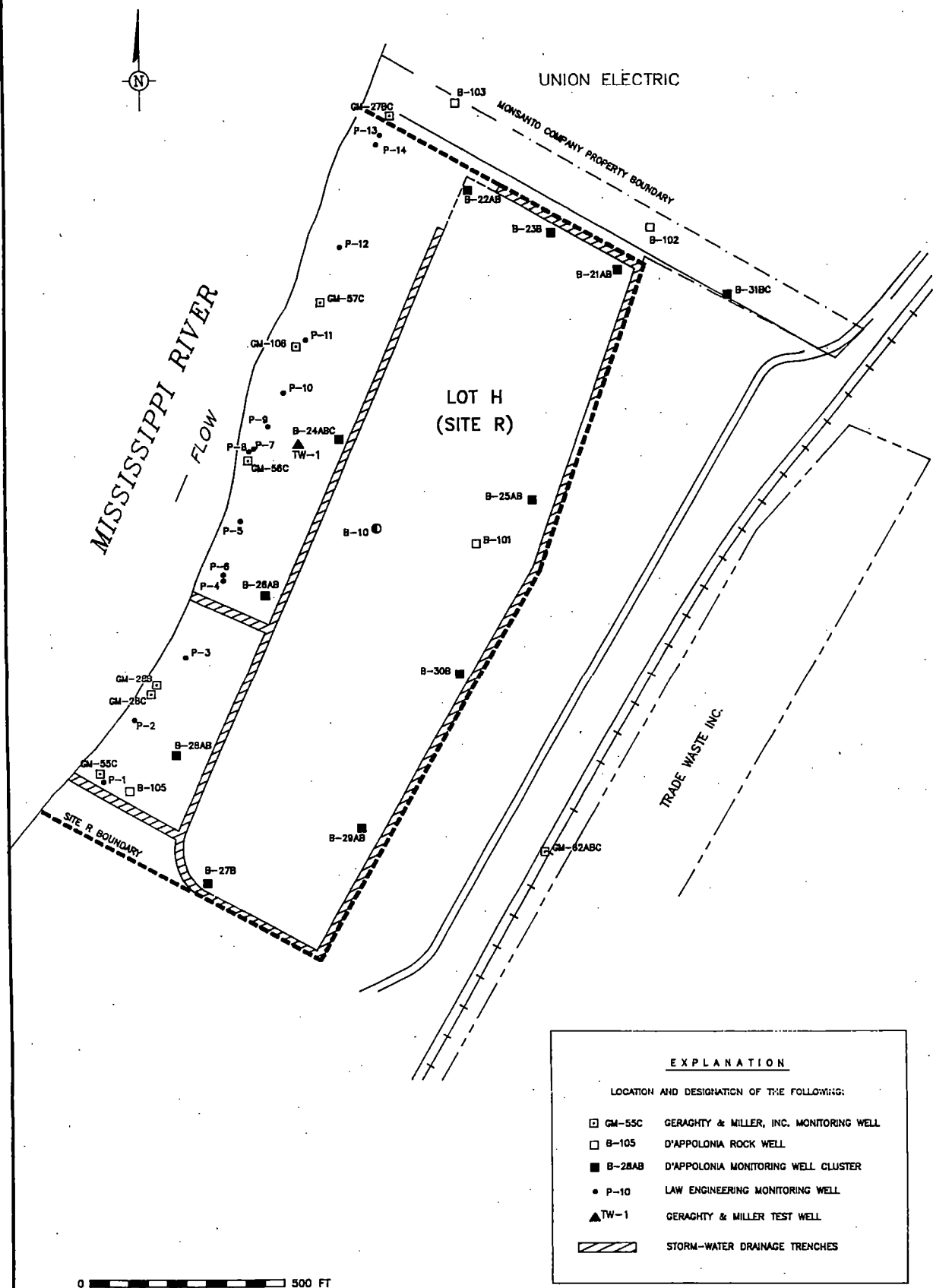
Hazardous Constituent	Upstream	Just North of Site R			North Edge of Site R					Middle of Site R			S
	SD-POP-90	SD-1-50	SD-1-150	SD-1-300	SD-2-50	SD-2-150	SD-2-330	PD-8-60	SD-3-99	PDA-5-60	SD-4-90	SD-5-75	
2,4-Dichlorophenol													
3-Methylphenol													
Phenol													
<b>PESTI- CIDES</b>													
delta-BHC													
Chlorobenzilate													
4,4'-DDD													
Methoxychlor													
<b>HERBI- CIDES</b>													
2,4-D													
<b>PCBs</b>													
Aroclor-1016													
Aroclor-1248													



## Enclosure 3

Hazardous Constituent	EDQL in $\mu\text{g/kg}$ (ppb)	Number of Sample Locations > EDQL
chlorobenzene	62	10
aniline	0.034	5
4-chloroaniline	146	4
PCBs	34	2
ethylbenzene	0.1	1
p-dichlorobenzene (1,4)	1,450	1
2,4-D	5.8	1
4,4'-DDD	5.5	1
3-methylphenol (m-cresol)	0.845	1
2-chlorophenol	11.7	1
2,4-dichlorophenol	133.6	1
phenol	27.3	1
benzene	142	0
toluene	52,500	0
o-dichlorobenzene (1,2)	3,010	0
m-dichlorobenzene (1,3)	231	0
xylene	1,880	0
$\Delta$ -BHC	71,500	0
methoxychlor	3.6	0
chlorobenzilate	860	0
bis(2-ethylhexyl)phthalate	182	0

Enclosure 4



Enclosure 5

Hazardous Constituent	Acute Criterion (ppb)	Chronic Criterion (ppb)	Human Health Criterion (ppb)
Chlorobenzene	993	79	-
Aniline	120	15	84
4-chloroaniline	2.4	(0.2)	800
PCBs	-	0.014*	-
Ethylbenzene	220	17	-
2-chlorophenol	510	41	130
2,4-dichlorophenol	631	83.1	-
Phenol	100**	-	-
Benzene	1,300	110	21
Toluene	1,300	110	-
1,2-dichlorobenzene	210	16.8	-
1,3-dichlorobenzene	500	196	-
Xylenes	1,500	120	-

( ) - Advisory

\* - National Recommended Criterion Continuous Concentration (63 FR 68359).

\*\* - IAC 302.208

Enclosure 6.

Hazardous Constituent	Sediment Locations Exceeding Acute Criterion	Sediment Locations Exceeding Chronic Criterion	Sediment Locations Exceeding Human Health Criterion
Chlorobenzene	PDA-2-60, SD-5-75, SD-5-150, SD-5-315, and SD-7-150	PDA-5-R-60, PDA-8-60, SD-2-150, SD-4-90, and SD-6-25 (dup)	
Aniline	PDA-2-60, PDA-5-R-60, SD-3-99 and SD-3-25 (dup), SD-5-75, and SD-5-150		PDA-2-60, PDA-5-R-60, SD-3-99 and SD-3-25 (dup), SD-5-75, and SD-5-150
4-chloroaniline	PDA-2-60, PDA-5-R-60, SD-2-150 SD-3-99, SD-5-75, SD-5-150, and SD-7-150		PDA-5-R-60, SD-5-75, and SD-5-150
PCBs*		PDA-5-R-60, SD-5-150 SD-6-90, and SD-7-150	
2-chlorophenol		PDA-5-R-60	PDA-5-R-60
2,4-dichlorophenol		PDA-5-R-60	
Phenol	PDA-5-R-60		
Benzene			SD-2-150, SD-5-75, SD-5-150, and SD-7-150
Toluene	PDA-2-60	PDA-5-R-60	
1,2-dichlorobenzene		PDA-2-60, and SD-6-90 and SD-6-25 (dup)	

\* - National Recommended Criterion Continuous Concentration (63 FR 68359).

**SOLUTIA - 052**



## ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

217/785-8604  
TDD 217/782-9143

April 23, 2001

Solutia, Inc.  
Attn: Robin Prokop, Plant Manager  
500 Monsanto Avenue  
Sauget, IL 62206-11987099 3400 0001 2104 8844  
CERTIFIED MAIL  
RETURN RECEIPT REQUESTEDRe: Violation Notice, M-2001-01016  
1631210006 - St. Clair County  
Sauget / Solutia, Inc.  
ILD000802702  
Compliance File

IJD. 163121AAC (Bureau of Air)

**RECEIVED**  
**IEPA****APR 26 2001**

Dear Ms. Prokop:

COLLINSVILLE OFFICE

This constitutes a Violation Notice pursuant to Section 31(a)(1) of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/31(a)(1), and is based upon inspections conducted on January 16, 2001 and January 22, 2001 by representatives of the Illinois Environmental Protection Agency ("Illinois EPA").

The Illinois EPA hereby provides notice of violations of environmental statutes, regulations, or permits as set forth in Attachments A and B of this letter. Attachments A and B include an explanation of the activities that the Illinois EPA believes may resolve the specified violations, including an estimate of a reasonable time period to complete the necessary activities. Due to the nature and seriousness of the violations cited, please be advised that resolution of the violations may require the involvement of a prosecutorial authority for purposes that may include, among others, the imposition of statutory penalties.

A written response, which may include a request for a meeting with representatives of the Illinois EPA, must be submitted via certified mail to the Illinois EPA within 45 days of receipt of this letter. The response must address each violation specified in Attachment A and include for each an explanation of the activities that will be implemented and the time schedule for the completion of that activity. The written response will constitute a proposed Compliance Commitment Agreement ("CCA") pursuant to Section 31 of the Act. The Illinois EPA will review the proposed CCA and will accept or reject it within 30 days of receipt.

GEORGE H. RYAN, GOVERNOR

KM  
6541

days of receipt.

Page 2, Violation Notice

If a timely written response to this Violation Notice is not provided, it shall be considered to be a waiver of the opportunity to respond and to meet and the Illinois EPA may proceed with a referral to the prosecutorial authority.


Written communications should be directed to:

Illinois EPA  
Attn: Brian White  
Bureau of Land #24  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276

All communications must include reference to this **VIOLATION NOTICE NUMBER, M-2001-01016.**

Questions regarding items in Attachment A should be directed to **GINA SEARCH** at **618/346-5120**. Questions regarding items in Attachment B should be directed to **MARK SCHLUETER** at **618/346-5120**.

Sincerely,



Paul M. Purselove, Manager  
Field Operations Section  
Bureau of Land

PMP:GRS:dv01016

Enclosure

bcc: Division File  
Collinsville Region  
Gina Search - Collinsville  
Mark Schluter-Collinsville  
Lynda Bennett - BOA HQ  
Chris Perzan - DLC  
Jim O'Brien - OER#28  
Deanne Virgin



1631210006 - St. Clair County  
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#### ATTACHMENT A

1. Pursuant to Section 12(a) of the [Illinois] Environmental Protection Act (415 ILCS 5/12(a)), no person shall cause or threaten or allow the discharge of any contaminants into the environment in any State so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources, or so as to violate regulations or standards adopted by the Pollution Control Board under this Act.

A violation of Section 12(a) of the [Illinois] Environmental Protection Act (415 ILCS 5/12(a)) is alleged for the following reason: **Causing or threatening or allowing the discharge of any contaminants into the environment so as to cause or tend to cause water pollution.**

Monitoring well RW1 was sampled (samples split with URS Corporation) by IEPA on January 22, 2001. The attached sampling report summarizes the data. The analytical results were evaluated for compliance with Title 35 Ill. Adm. Code 620 Groundwater Standards. The samples collected from RW1 exceeded the Part 620 Organic Groundwater Standards.

2. Pursuant to Section 12(d) of the [Illinois] Environmental Protection Act (415 ILCS 5/12(d)), no person shall deposit any contaminants upon the land in such place and manner so as to create a water pollution hazard.

A violation of Section 12(d) of the [Illinois] Environmental Protection Act (415 ILCS 5/12(d)) is alleged for the following reason: **Causing or threatening or allowing the discharge of any contaminants into the environment so as to cause or tend to cause water pollution. See paragraph 1.**

3. Pursuant to Section 21(f)(1) & (2) of the [Illinois] Environmental Protection Act (415 ILCS 5/21(f)), no person shall conduct any hazardous waste-storage, hazardous waste-treatment or hazardous waste-disposal operation:

1. Without a RCRA permit for the site issued by the Agency under subsection (d) of Section 39 of this Act, or in violation of any condition imposed by such permit, including periodic reports and full access to adequate records and the inspection of facilities, as may be necessary to assure compliance with this Act and with regulations and standards adopted thereunder; or
2. In violation of any regulations or standards adopted by the Board under this Act.

1631210006 - St. Clair County  
Solutia, Inc.  
ILD000802702

Page 2

A violation of Section 21(f)(1) & (2) of the [Illinois] Environmental Protection Act (415 ILCS 5/21(f)) is alleged for the following reason: **Violations of the 35 Ill. Adm. Code Part 620 were cited as a result of the January 22, 2001 Groundwater Sampling Inspection.**

4. Pursuant to 35 Ill. Adm. Code 620.115, no person shall cause, threaten or allow a violation of the Act, the IGPA or regulations adopted by the Board thereunder, including but not limited to this Part.

A violation of 35 Ill. Adm. Code 620.115 is alleged for the following reasons: See Paragraphs 1,2,3.

5. Pursuant to 35 Ill. Adm. Code 620.301(a), no person shall cause, threaten or allow the release of any contaminant to a resource groundwater such that:

1) Treatment or additional treatment is necessary to continue an existing use or to assure a potential use of such groundwater; or

2) An existing or potential use of such groundwater is precluded.

A violation of 35 Ill. Adm. Code 620.301(a) is alleged for the following reason: See Paragraph 1.

6. Pursuant to 35 Ill. Adm. Code 620.405, no person shall cause, threaten or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard set forth in this Subpart to be exceeded.

A violation of 35 Ill. Adm. Code 620.405 is alleged for the following reason: See Paragraph 1.

7. Pursuant to 35 Ill. Adm. Code 620.410(b), causing or allowing concentrations of organic chemical constituents to exceed established standards for Class I Groundwater.

A violation of 35 Ill. Adm. Code 620.410(b) is alleged for the following reason: See Paragraph 1.

1631210006 - St. Clair County  
Solutia, Inc.  
ILD000802702

Page 3

### **SUGGESTED RESOLUTIONS**

- 1. Submit a Remedial Action Plan by June 30, 2001. This report should include the following:**
  - a) A description of the subsurface conditions at the incident location and surrounding area affected by the release.**
  - b) A statement of the scope of the problem to be mitigated by the remedial action.**
  - c) A proposal for remediation actions, including removal of free product, to be implemented at the incident site.**
  - d) Time frames for implementing and completing the remedial activities.**

**The effectiveness of the remedial action will be determined by comparing the confirmatory groundwater sample results for the chemical parameters to the appropriate cleanup criteria from 35 Ill. Adm. Code 742 (TACO).**

**The written response to this Violation Notice must include information in rebuttal, explanation, or justification of each alleged violation and must be submitted to the Illinois EPA by certified mail, within 45 days of receipt of this Violation Notice. The written response must also include a proposed Compliance Commitment Agreement that commits to specific remedial actions, includes specified times for achieving each commitment, and may include a statement that compliance has been achieved.**

GRS:cas

Violation Notice M-2001-01016  
Solutia, Inc., I.D. 163121AAC (Bureau of Air)

ATTACHMENT B -- BUREAU OF AIR

VIOLATIONS:

Per observations by Mark Schlueter on January 16, 2001, and other available information:

1. Section 9(a) of the Act and 35 Ill. Adm. Code 219.966: On January 7 and 8, 2001, Solutia allowed an uncontrolled, unauthorized and unpermitted release of 350 gallons of monochlorobenzene into the atmosphere. The release occurred as the result of human error and was allowed to occur over a 12-hour period.
2. Section 9(a) of the Act and 35 Ill. Adm. Code 201.141: The release of monochlorobenzene which occurred on January 7 and 8, 2001, resulted in the emission of air contaminants to the atmosphere and caused air pollution.
3. Section 9(b) of the Act and standard condition 6 of permit 85060055: Solutia failed to operate its valves in a manner consistent with standard condition 6 of permit 85060055.

RECOMMENDATIONS:

The Illinois EPA suggests that Solutia take the following actions in order to address the violations stated above:

An engineering investigation should be undertaken to determine the cause of the January 7 and 8, 2001, release and itemize corrective actions taken to prevent this from occurring in the future at the monochlorobenzene unit and any other process units with similar operating characteristics at Solutia's Krummrich Plant.